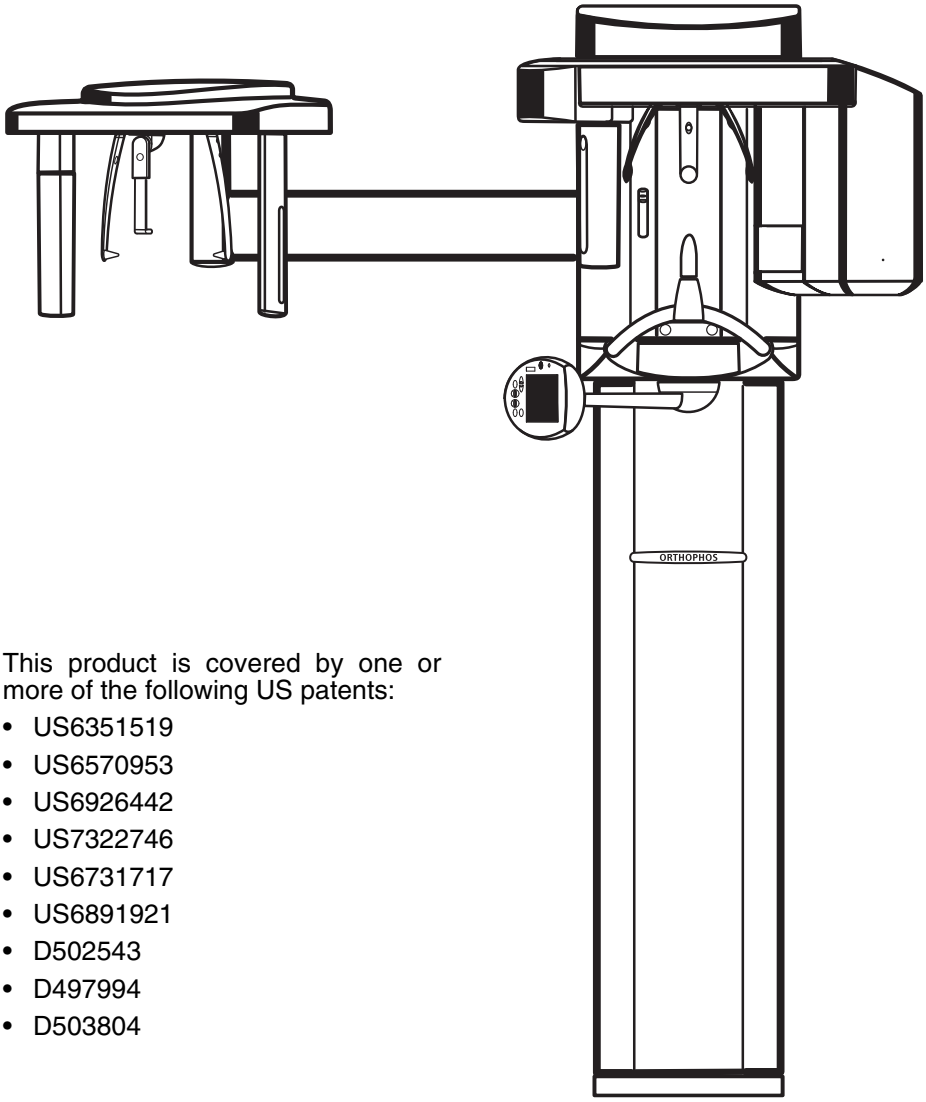
sirona
The Dental Company

ORTHOPHOS XG^{Plus} DS/Ceph

Operating Instructions

USA



This product is covered by one or more of the following US patents:

- US6351519
- US6570953
- US6926442
- US7322746
- US6731717
- US6891921
- D502543
- D497994
- D503804

General information

Dear Customer,

Thank you for purchasing your **ORTHOPHOS XG**^{Plus} panoramic X-ray unit from Sirona.

This system enables you to take standard views (jaw area), sinus views (maxillary sinuses) and temporomandibular joint views using digital imaging technology.

If the system is equipped with a cephalometer arm, you can furthermore take cephalometric images using digital imaging technology.

The **technical documentation** supplied is also part of the product. Keep these documents handy at all times (file them in the X-ray System Logbook in Germany).

To safeguard your warranty claims, please complete the attached "**Installation Report/Warranty Passport**" together with the service engineer immediately after the installation of your unit.

Please familiarize yourself with the unit by reading through these **Operating Instructions** before taking any X-rays of patients. Please comply with the applicable **radiation protection regulations** and **warnings** at all times.

These operating instructions presuppose that you are familiar with the use of SIDEXIS software. According to the X-ray Ordinance of the Federal Republic of Germany, owners of X-ray equipment must perform constancy tests at regular intervals in order to ensure the safety of operating staff and patients.

Your **ORTHOPHOS XG**^{Plus} Team

Maintenance

In the interest of the safety and health of patients, users and other persons, inspection and preventive maintenance must be performed at scheduled intervals to ensure the operational reliability and functional safety of your product (IEC 601-1/DIN EN 60601-1 etc.).

The system owner must ensure that all inspections and maintenance events take place.

If the system owner fails to fulfill the obligation to have inspections and maintenance work performed or ignores error messages, Sirona Dental Systems GmbH and its authorized dealers cannot assume any liability for resulting damage.

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1 Warning and safety information

1.1 General safety information

Identification of warning and safety information

To prevent any personal injury or material damage, please observe the warning and safety information provided in the present operating instructions. All such information is highlighted by the signal words **NOTICE**, **CAUTION** or **WARNING**.

Symbols used

Observe information in accompanying documents. They are attached to the unit.

Single use devices are identified with the symbol shown on the left.

Intended use

This system is intended for generating panoramic or cephalometric X-ray images.

This system must not be used in areas subject to explosion hazards.

Maintenance and repair

As manufacturers of medical electrical equipment we can assume responsibility for the safety-related features of the equipment only if **maintenance and repair** are carried out only by ourselves or agencies expressly authorized by us, and if components affecting safe operation of the system are replaced with **original spare parts** upon failure.

We suggest that you request a certificate showing the nature and extent of the work performed from those who carry out such work; it must contain any changes in rated parameters or working ranges (if applicable), as well as the date, the name of the company and a signature.

Modifications to the system

Modifications to this system which might affect the safety of the system owner, patients or other persons are prohibited by law!

For reasons of product safety, this product may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user assumes the risk of using non-approved accessories.

Combination with other equipment

Permissible combinations are specified in the Declaration of Conformity by the system integrator.

The Declaration of Conformity is included in the technical documentation.

Ventilation slots

Under no circumstances may the ventilation slots on the unit be covered, since otherwise the air circulation will be obstructed.

Do not spray disinfectants or other similar products into the ventilation slots.

X-raying of patients

X-rays of patients must be taken only when the system works without errors.

The system may only be operated by skilled or properly trained personnel.

The movements of the unit must not be obstructed by physical constitution nor clothing, dressings, wheelchairs or hospital beds!

Do not leave the patient unattended in the unit.

Electromagnetic compatibility (EMC)

Medical electrical equipment is subject to special precautionary measures regarding EMC. It must be installed and operated as specified in the document “Installation Requirements”.

Information on avoiding, detecting and eliminating unintended electromagnetic effects: The **ORTHOPHOS XG^{Plus}** DS/Ceph acquisition unit is Class **B** equipment (classified according to CISPR 11, EN 60601-1-2: 2001 based on IEC 60601-1-2). This system may be operated in a residential area.

Portable and mobile RF communications equipment may interfere with medical electrical equipment. Therefore, the use of mobile wireless phones in medical office or hospital environments must be prohibited.

Please also observe the ESD protective measures in Chapter 1.2.

Removing the sensor

To remove the sensor, hold it firmly, press the pushbutton **fully** in and hold it down. Remove the sensor from its holder by pulling it downward.
DO NOT DROP THE SENSOR!
A shock sensor for detecting shocks or drops is built in. When removing the sensor or handling a sensor that has already been removed, make sure not to touch the sensor plug on the unit end, especially not while touching the patient at the same time.

Precautionary measures when switching on the unit

Following extreme changes in temperature, condensation may occur; therefore, please do not switch the system on until it has reached normal room temperature (see chapter “Technical description”).

No patient may be positioned in the unit during power-on.

In case of an error that requires switching the unit off and back on again, the patient must be removed from the unit, at the latest before switching the unit on again!

Emergency Stop

If any parts of the unit happen to touch the patient during the rotary movement (PAN exposure) or during the scan movement (cephalometric exposure), let go of the exposure release button (X-Ray) immediately or stop the unit by actuating the unit main switch or an Emergency Stop switch!

Interference with electronic devices worn on the patient's body.

To prevent the malfunctioning of electronic devices and data storage devices, e.g. radio-controlled watches, telephone cards, etc., these objects must be removed prior to X-raying.

Radiation protection

The valid radiation protection regulations must be observed.

The operator should move as far away from the X-ray tube assembly as allowed by the coiled cable of the exposure release button.
The statutory radiation protection equipment must be used.

With the exception of the patient, no other persons without radiation protection are allowed to stay in the room. In exceptional cases, a third person may provide assistance, but not the practice staff. During the whole exposure, visual contact with the patient and the unit must be maintained.

In case of malfunctions, cancel the exposure immediately by letting go of the exposure release button.

Hygiene information

The protective sleeves must be exchanged and the sterilizable accessories must be resterilized for each new patient to prevent any transmission of infective agents which might cause serious illnesses.

Suitable hygienic measures must be taken to prevent cross contamination among patients, users and other persons.

Dismantling and reinstallation

When dismantling and reinstalling the system, proceed according to the installation instructions for new installation in order to guarantee its proper functioning and stability.

Laser light localizer used

LASER KLASSE 1
CLASS 1 LASER PRODUCT
APPAREIL A 'LASER DE CLASSE 1
Date of manufacture:
August 2007
Complies with 21 CFR 1040.10 and 1040.11
except for deviations pursant to
Laser Notice No. 50, dated (June 24, 2007)
Sirona Dental Systems GmbH
Fabrikstr. 31
D-64625 Bensheim, Germany
Manufactured in Bensheim

The system incorporates Class 1 laser products.

The light localizers are intended for correct patient positioning. They must not be used for any other purposes.

A minimum distance of 100 mm between the eye and the laser is required. Do not stare into the beam. Safe operation is described in chapter "9.3 Positioning the patient".

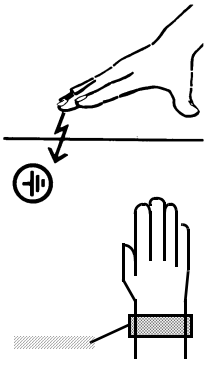
The light localizers may be switched on only when functioning perfectly. Repair work must be carried out by authorized staff only.

1.2 ESD protective measures

ESD stands for **E**lectro**S**tatic **D**ischarge.

ATTENTION

Connector pins or sockets bearing ESD warning labels must not be touched or interconnected ***without ESD protective measures****.*



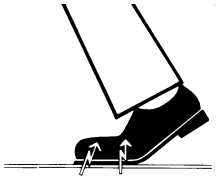
ESD protective measures include:

- Procedures for preventing electrostatic charge build-up (e.g. air conditioning, air moistening, conductive floor coverings and non-synthetic clothing)
- Discharging the electrostatic charges of your own body on the frame of the UNIT, the protective ground wire or large metallic objects
- Connecting yourself to ground using a wrist band.

We therefore recommend that all persons working with this system be instructed on the significance of this warning label. Furthermore, they also should receive training in the physics of electrostatic discharges which can occur in the practice and the destruction of electronic components which may result if such components are touched by electrostatically charged USERS.

The content of this training is explained in Chapter 1.3.

1.3 About the physics of electrostatic charges



ESD stands for **E**lectro**S**tatic **D**ischarge. Electrostatic discharge must be preceded by electrostatic charging.

Static electric charges generally build up whenever two bodies are rubbed against each other, e.g. when walking (shoe soles against the floor) or driving a vehicle (tires against the street pavement). The amount of charge depends on several factors:

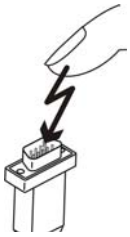
Thus the charge is higher in an environment with low air humidity than in one with high air humidity; it is also higher with synthetic materials than with natural materials (clothing, floor coverings).

The following rule of thumb can be applied to assess the transient voltages resulting from an electrostatic discharge.

An electrostatic discharge is:

- perceptible at 3,000 V or higher
- audible at 5,000 V or higher (cracking, crackling)
- visible at 10,000 V or higher (arc-over)

1 nanosecond = 1/1,000,000,000 second = 1 billionth of a second



The transient currents resulting from these discharges have a magnitude of 10 amperes. They are not hazardous for humans because they last for only several nanoseconds.

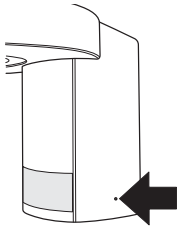
Voltage differentials exceeding 30,000 volts per centimeter may lead to a charge transfer (electrostatic discharge, lightning, arc-over).

Integrated circuits (logical circuits and microprocessors) are used in order to implement a wide variety of functions in dental/X-ray/CEREC systems. The circuits must be miniaturized to a very high degree in order to include as many functions as possible on these chips. This leads to structure thicknesses as low as a few ten thousandths of a millimeter.

It is obvious that integrated circuits which are connected to plugs leading outside of the unit via cables are sensitive to electrostatic discharge. Even voltages which are imperceptible to the user can cause breakdown of the structures, thus leading to a discharge current which melts the chip in the affected areas. Damage to individual integrated circuits may cause malfunction or failure of the system.

To prevent this from happening, the ESD warning label next to the plug warns of this hazard.

2 Technical description

Model designation	ORTHOPHOS XG^{Plus} DS/Ceph
Nominal voltage:	200 – 240V
Permissible deviation:	±10%
Permissible drop under load:	10%
Rated current:	12A
Nominal power output:	2 kW at 90 kV/12 mA with any radiation time
Nominal frequency:	50/60Hz
Internal line impedance:	max. 0.8 Ohm
Main building fuse:	25 A slow-blow (16 A for standalone connection)
Power consumption:	2 kVA
Power output of tube assembly:	90 kV/12 mA = 1080 W with any radiation time
Tube voltage:	60 – 90kV (for 90 kV max. 12 mA)
Tube current:	3 –16mA (at 16 mA max. 66 kV)
Maximum setting range	60 kV/3 mA to 90 kV/12 mA
High-voltage waveform:	High-frequency multipulse Residual ripple ≤ 4 kV
Program duration:	see chapter 12
Exposure time:	see chapter 12
Image acquisition scale:	For P1, normal dental arch (slice center) approx. 1:1.19, i.e. the acquired image is magnified by approx. 19 % on average compared to reality.
Exposure time for cephalometry	max. 14.9 s
Total filtration of X-ray tube assembly	> 2.5 Al/90 IEC 522 1976
Focal spot size acc. to IEC 336, measured in the central X-ray beam:	0.5mm
Marking of focal spot:	

Automatic exposure blocking (see page 46):	The duration of automatic exposure blocking (cooling period) depends on the set **kV/mA** level and the actual exposure time. Depending on the tube load, a pause duration of 8 s to 300 s is automatically set by the system. Example: For program P1 with 80 kV/14 mA as exposure parameters and a radiation time of 14.1 s, the resulting pause duration is 255 s.
Class I equipment Degree of protection against electric shock:	Type B equipment
Degree of protection against ingress of water:	Ordinary equipment (without protection against ingress of water)
Year of manufacture	(on the rating plate)
Operating mode:	Continuous operation
Long-term power output:	100 W
Anode material:	Tungsten
Exposure parameters for determining leakage radiation:	1.1 mA/90 kV
Transport and storage temperature:	-10° C – +70° C (14 °F – 158 °F)
Air humidity:	10% – 95%
Admissible operating temperature:	Acc. to IEC 601-1 between +10° C and +40° C (50° F – 104° F)

Panoramic exposures:

Sensor (image receptor):

Pan sensor type:	Digital CCD line sensor, repluggable for panoramic exposure technique
Active sensor area, Pan type:	138 x 6.48 mm
Detail resolution:	0.027 mm pixel size
Focus/sensor distance	497 mm

Cephalometric exposures:

Sensor (image receptor):

Ceph sensor type:	Digital CCD line sensor, repluggable for panoramic or ceph exposure technique
Active sensor area, Ceph type:	230 mm x 6.48 mm
Detail resolution:	0.027 mm pixel size
Focus-sensor distance:	1714 mm

TSA exposure:

Sensor (image receptor):

TSA senor type:	Digital CCD line sensor, repluggable for panoramic or ceph exposure technique
Active sensor area, TSA type	60 mm x 20 mm
Detail resolution:	0.0195 mm pixel size
Focus-sensor distance:	497 mm

X-ray tube:	**SR 90/15 from Siemens or OCX 100 CEI**

Minimum requirements for PC systems:

Hard disk:	> 4 GB/database > 50 MB/SIDEXIS installation
RAM:	min. 256 MB
Drives:	CD-ROM MOD drive, min. 640 MB (one per system/network)
Operating system:	Minimum requirement: Windows 2000 Workstation (SP 4), Windows XP Professional Workstation (SP 2), or Vista. For further information, please visit the Sidexis homepage at www.sidexis.com or refer to the Sidexis user manual.
Graphics system:	Min. resolution 1024 x 768 pixels, min. color depth 8 bits
Network:	10/100 MBit Ethernet
Communication interface:	RJ45 for LAN cable

ORTHOPHOS XG^{Plus} DS/Ceph complies with IEC 601-2-28/1993

ORTHOPHOS XG^{Plus} DS/Ceph complies with IEC 601-1-3/1994

ORTHOPHOS XG^{Plus} DS/Ceph complies with IEC 601-2-7/1998

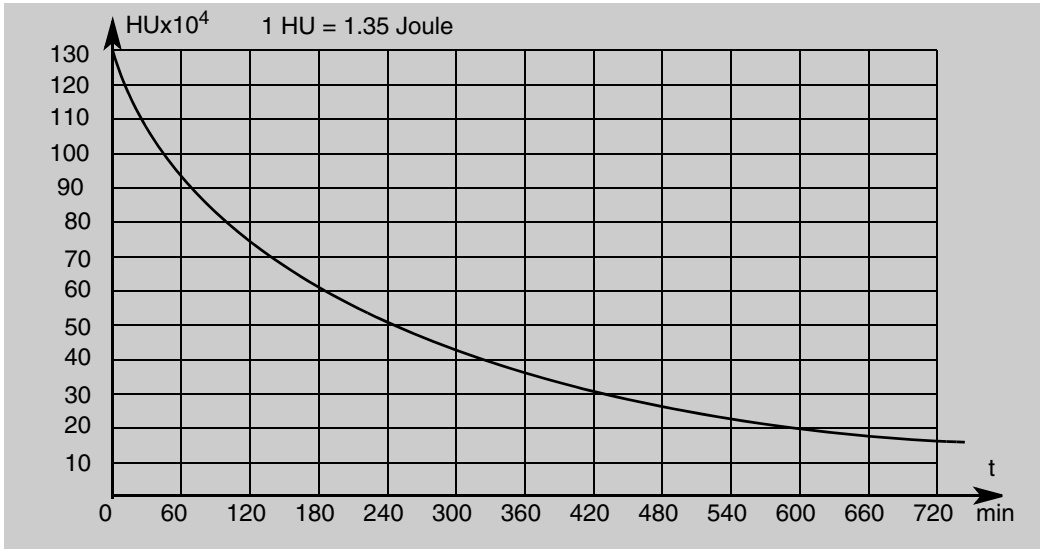
ORTHOPHOS XG^{Plus} DS/Ceph complies with AS/NZS 3200.1.0

Original language:	German
Reg. No.: China	SFDA (I) 2008 2303722
Product Standard No.:	YZB/GEM 4911 - 2008

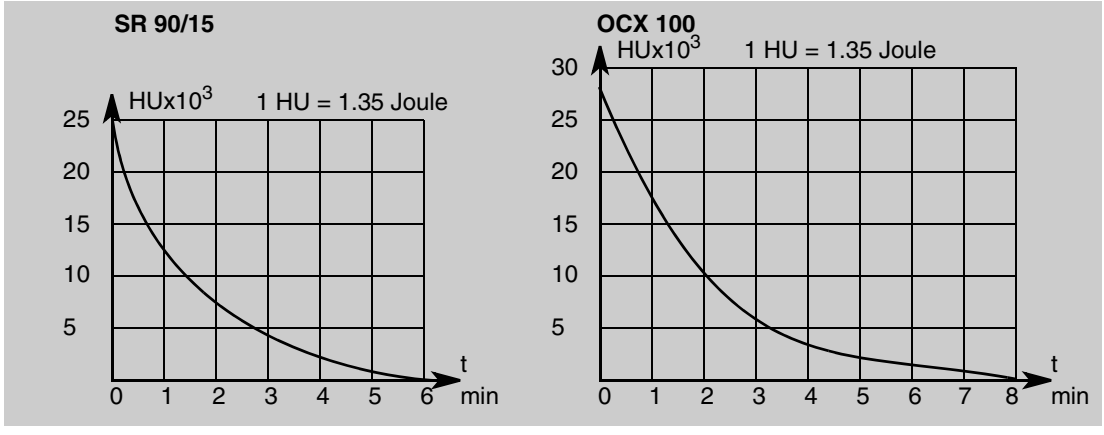
CE
0123

This product bears the CE mark in accordance with the provisions of the Council Directive 93/42/EEC of June 14, 1993 concerning medical devices.

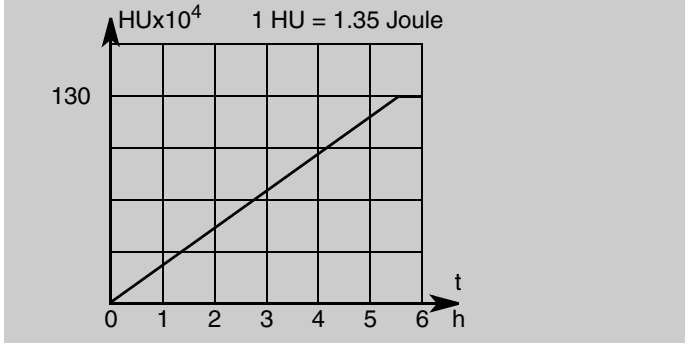
Cooling curve of tube housing



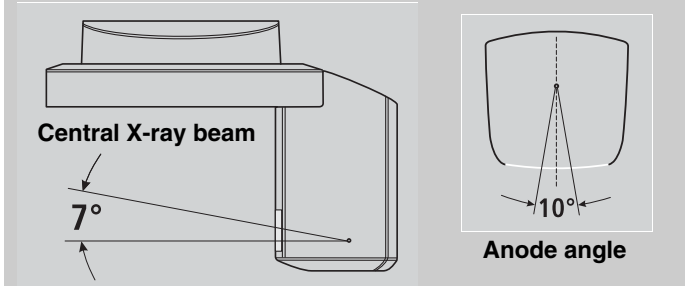
Cooling curve of X-ray tube



Heating curve of tube housing



Central X-ray beam/anode angle



These operating instructions are valid for the basic and full versions of the system.

The following programs and functions are included in the basic version:

18 panoramic programs:

P1, P1 A, P1 C, P2, P10
P1 L, P1 R
P12
BW1, BW1 L, BW1 R
BW2
TM1.1/TM1.2 with angle input
TM1A.1/TM1A.2 with angle input
TM2.1/TM2.2
S1
S2
MS1

5 Ceph programs:

C1, C2, C3, C3 F, C4

Half-views of right/left side possible only with P1 (not upper/lower jaw).

The full version offers the following programs and functions in addition to those featured in the basic version:

Additional pan programs:

Constant magnification factor of 1.25 P2 C, P10 C
Artifact-reduced display P2 A, P10 A
Selectable right/left side image detail and individual quadrants P1A/C, P2/A/C, P10/A/C
Image detail selectable upper jaw/lower jaw and single quadrants P1A/C, P2/A/C, P10/A/C
Selectable upper jaw/lower jaw image detail P12
Temporomandibular joint views TM2.1/TM2.2 with angle input, TM2A.1/TM2A.2 with angle input, TM3, TM4, TM5, TM6
Sinus views S3, S4

Presetting for “jaw shape” available.
Quickshot function possible (for Pan P1, P1 A, P1 C, P2, P2 A, P2 C, P10, P10 A, P10 C, and Ceph C1 to C4).
Execution of exposure templates from SIDEXIS possible without cooling periods, e.g.: orthodontic image series P1 - C3 - C4.
Welcome screen with patient data from SIDEXIS.
Ceph – shadowing in the upper cranial region preselectable for programs C3 and C3 F.
Ceph – shadowing in the thyroid area for programs C1 and C2 can be preselected.

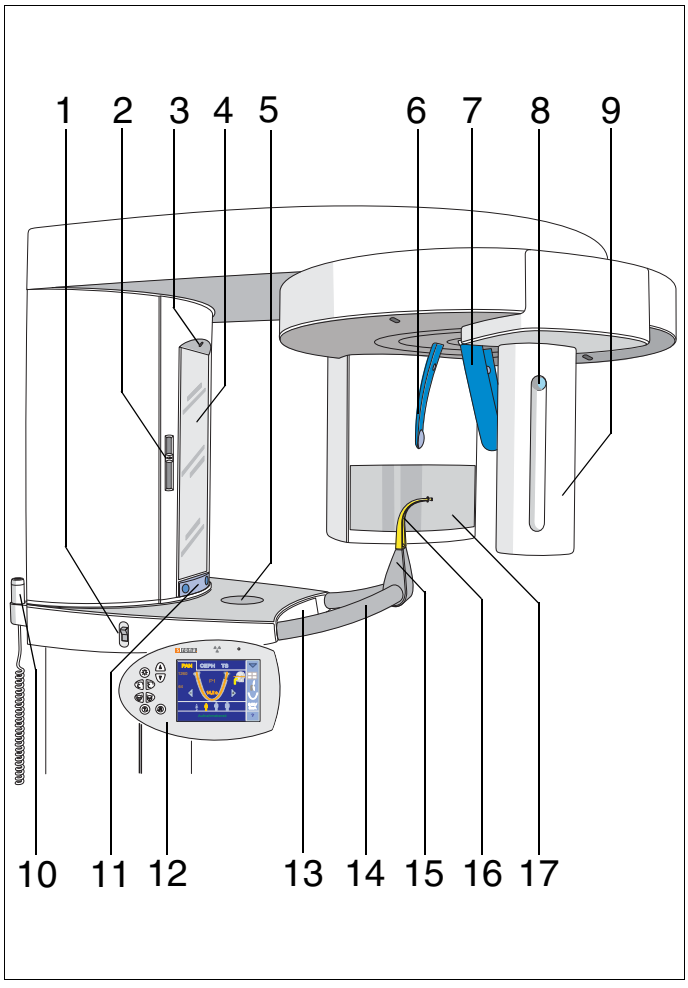
Option for basic version and full version:

TSA function (transversal slices)

It is possible to upgrade a basic version system to a full version system and/or to include the TSA function. For this purpose you must purchase a certificate with a corresponding activation key code (see chapter 17).
If you order a new unit with TSA function from the factory, it is activated already at the factory.

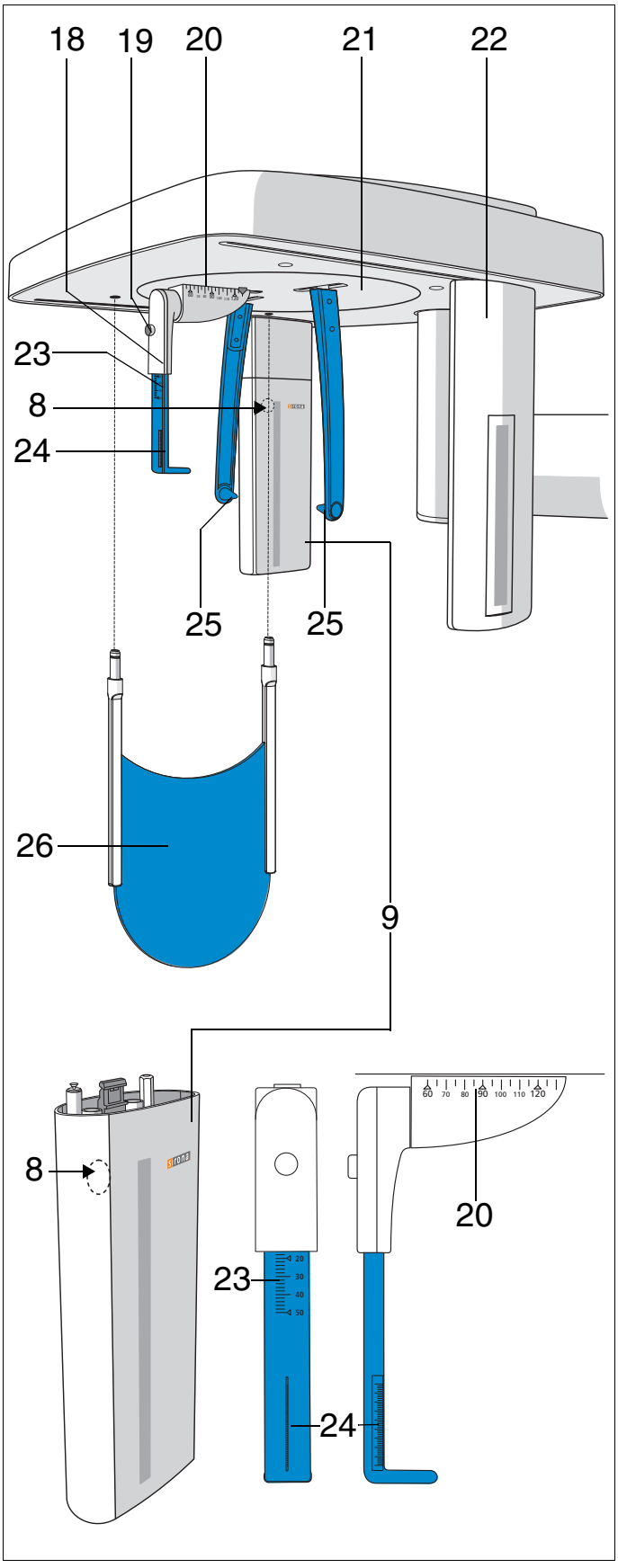
3 Controls and functional elements

3.1 Operating and Display Elements



on the Panoramic unit

1. Main switch
2. Light localizer with height adjustment of FH light line
3. Light localizer central light beam for face center
4. Control mirror for patient positioning
5. Tray for jewelry, etc.
6. Forehead support
7. Temple supports
8. Pushbutton for sensor (image receptor) removal
9. Sensor (image receptor) according to the unit version
   for XG Pan
   for XG Ceph
   for XG Pan/TSA
   for XG Ceph/TSA
10. Exposure release button (must be pressed and held down during the entire exposure)
11. Touch bar for swiveling the control mirror in and out
12. Easypad (swiveling control panel)
13. Drawer for accessories
14. Handles for patient
15. Holder for chin rest, bite blocks or contact segments, etc.
16. Bite block, contact segment or chin rest
17. Primary diaphragm field on the X-ray tube assembly



Controls and scales on the cephalometer

8. Pushbutton for sensor removal

9. Sensor (image receptor)

18. Nose support

19. Locking knob for nose support

20. Scale for horizontal nose support adjustment

21. Rotating element for rotary movement of head supports

22. Secondary diaphragm with FH line light localizer

23. Scale for vertical nose support adjustment

24. Projection scale

25. Ear plugs with holders

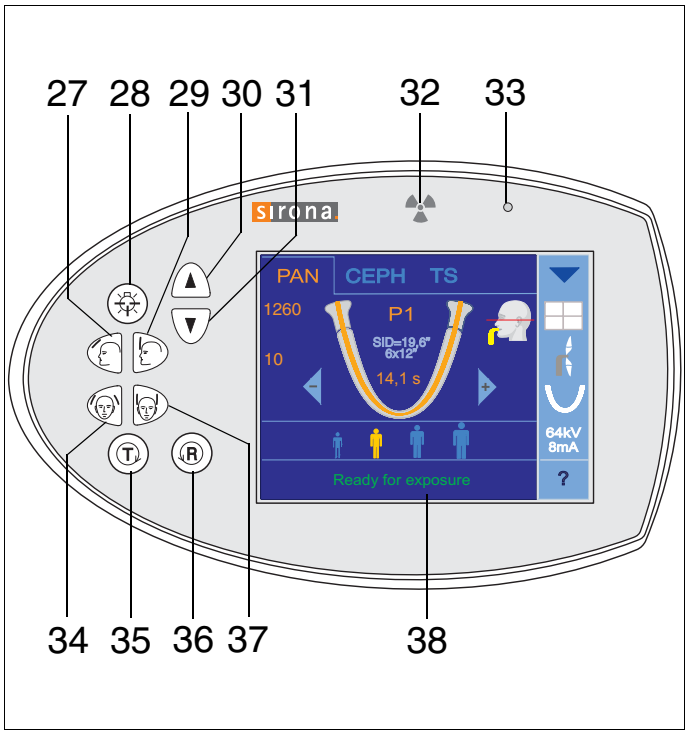
26. Carpus support plate

Magnification of the lateral view

With this exposure technique, a metal scale (24) integrated in the nose support is displayed on the X-ray image.
Using this scale, the magnification factor in the median plane can be determined precisely via a measurement.

ATTENTION

Never support yourself on the cephalometer or the ceph arm, hang objects from them or place objects on them. Otherwise their adjustment may be altered, thus resulting in incorrect images.



Controls and displays on the Easypad with touchscreen

27. **"Move forehead support away from forehead"** key

28. Light localizers ON/OFF

29. **"Move forehead support to forehead"** key

30. **"Unit up"** arrow key

31. **"Unit down"** arrow key

32. Optical radiation indicator

33. **"Unit ON"** LED

34. **"Open temple supports"** key

35. "**T**" key for test cycle without radiation

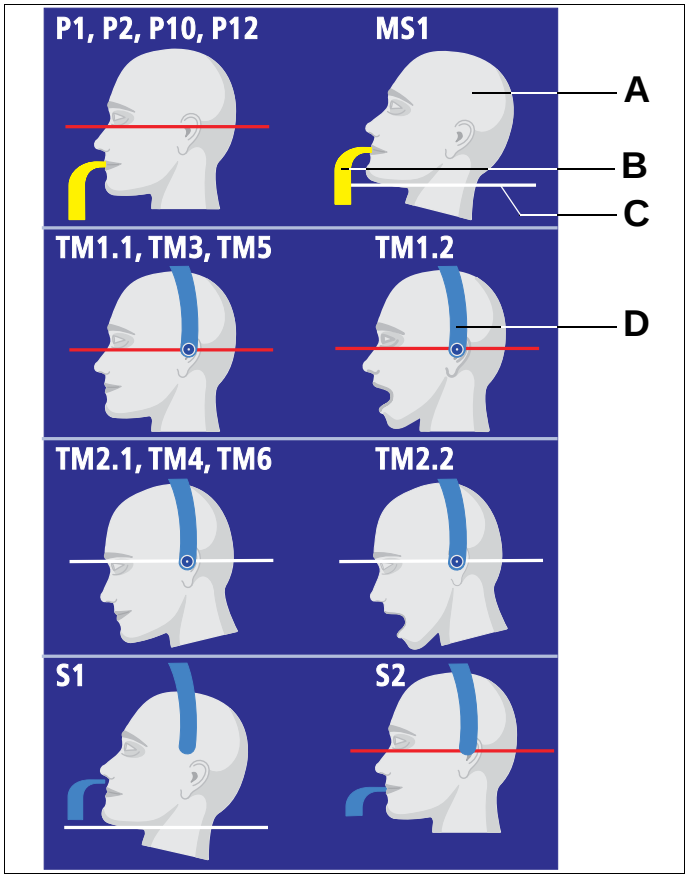
36. "**R**" key for unit return

37. **"Close temple supports"** key

38. Touchscreen – touch-sensitive screen

ATTENTION

Never touch the touchscreen with sharp or pointed objects (ball-point pens, pencils, etc.)!



Display aids for patient head positioning

The icon for the patient's head that is displayed in the upper right corner for panoramic and TSA images will guide you in positioning the patient's head.

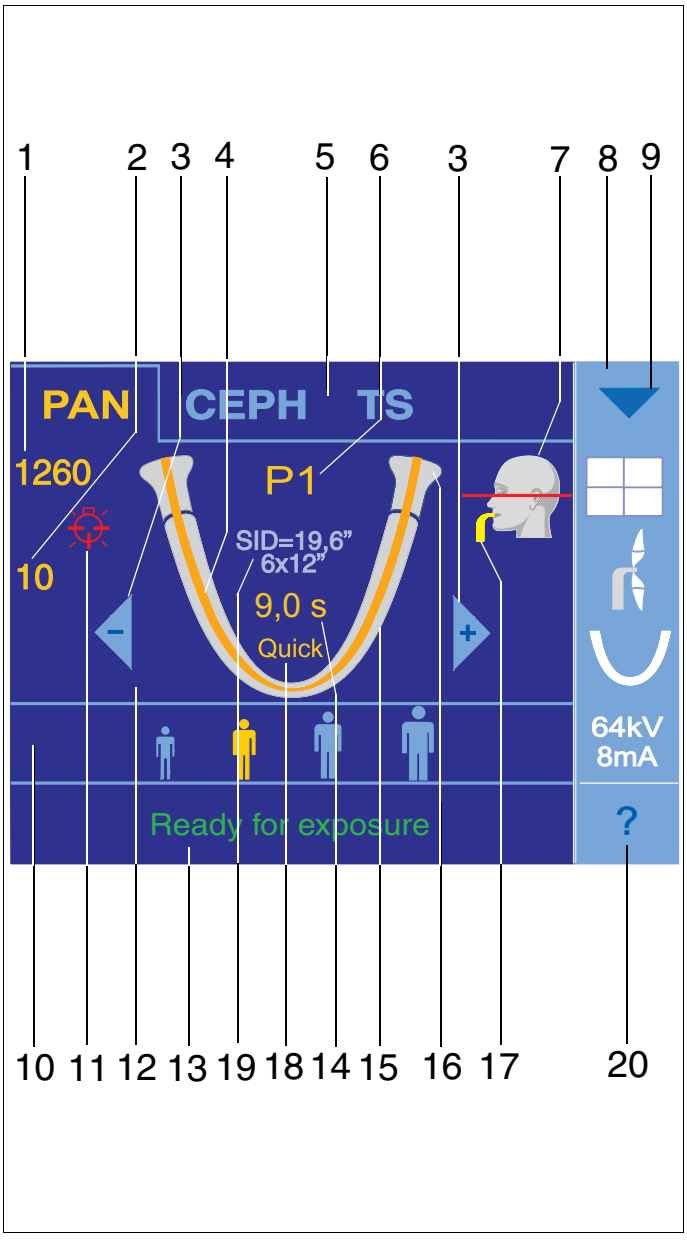
A The gray patient's head icon shows the head posture: straight (FH), bent forward with open or closed mouth, or reclined.

B A colored symbol (yellow or blue) will indicate if a bite block or a contact segment should be used.

C The **red** line indicates the reflecting light localizer line (FH), the **white** line is only an auxiliary line to indicate the head inclination.

D In addition, for temporomandibular joint and sinus views the temporomandibular joint support is displayed in blue.
If the end of the joint is marked with a small circle with a dot in its middle, you will need to attach ear holders. If this icon is not displayed, use contact pads only.

3.2 General touchscreen functions



Touchscreen = touch-sensitive screen, i.e. touching the screen surface triggers different functions.

Color codes:

orange – selected

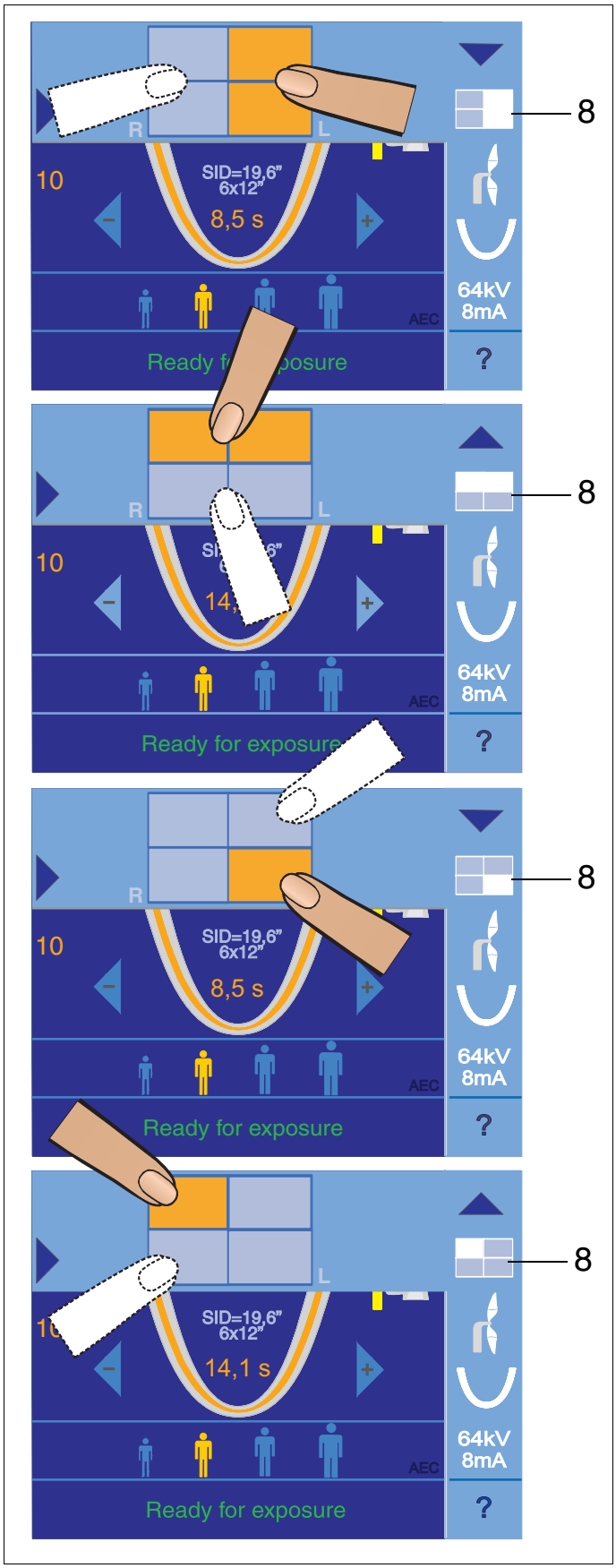
white – presettings

light blue – selectable

grey and white – auxiliary symbols

Touchscreen symbols

1. Display of height setting value
2. Display of forehead support setting value
3. Program selection keys –/+
   Sequence: P 1, P 2, P 10, P 12, BW1, BW2, TM 1, TM 2, TM3, TM 4, TM 5, TM 6, S 1, S2, S3, S4, MS 1
4. Orange – display of the exposure area for the selected program (dental arch or dental arch segment)
5. Display of program group selection
6. Program display; touch to loop through P1 (normal panoramic view), P1C (with constant magnification), P1A (artifact-reduced display)...
7. Display of head posture (FH or bent forward or backward, mouth open or closed) with reference line for the chosen program
8. Submenu column (options)
9. Blue arrows: Select submenu, close menu
10. Preselection of exposure parameters (patient symbols)
11. Red symbol for light localizer ON (is displayed as long as the laser light of the light localizer is switched on)
12. Program-specific menu area
13. Comment line for help and error messages
14. Expected radiation time (upon completion actual radiation time)
15. Light gray symbol for dental arch
16. Light gray symbol for temporomandibular joints
17. Display of color-coded bite block or contact segment for the chosen program
18. Quickshot display – ON (visible)/OFF (hidden) for reduction of cycle time
19. Upper display – focus/sensor distance
    Lower display – maximum exposed area
20. When you touch the **?** symbol, the help or info screen is displayed



Program settings

When you touch a symbol in the “submenu” column (8), a submenu line for program settings opens.

There are 4 submenu lines for program settings available:

1. Selection of half-view and individual quadrants

In this submenu, you can select a half-view of the jaw, i.e. right or left side (P1, P2, P10, BW1) or upper or lower jaw (P1, P2, P10, P12) for programs P1, P2 and P10 including constant magnification and artifact-reduced display.

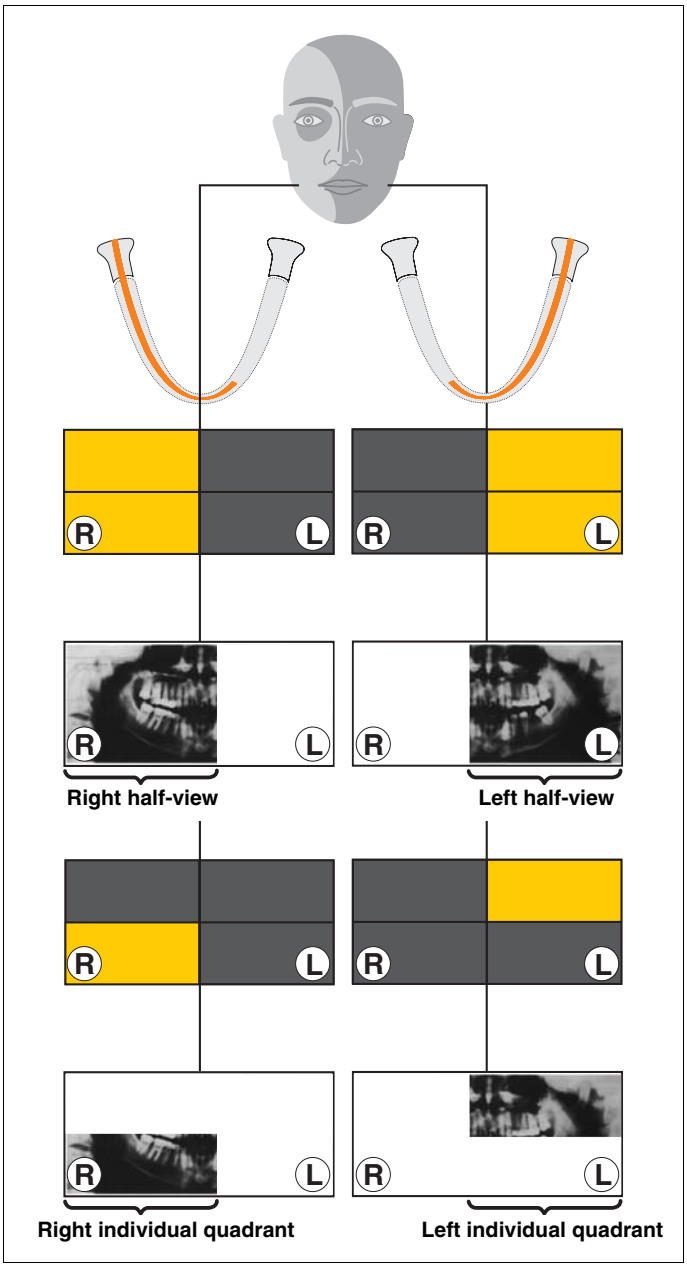
The preselected type of exposure is also displayed in the submenu column (8).

Selection of individual quadrants

The full version of XG Plus offers the option of selecting individual quadrants.

For each selection, please make sure that you know where to touch the icon (see finger).

You can reactivate the full screen mode by touching the center of the quadrant field.

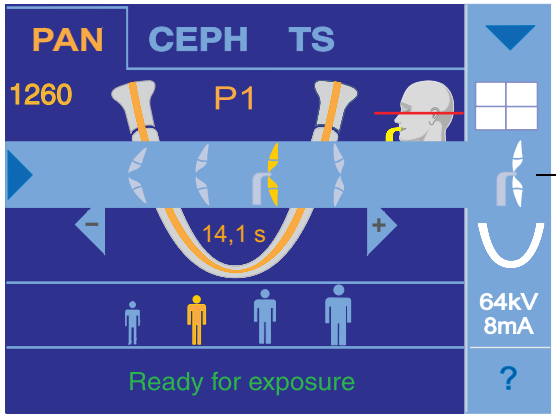


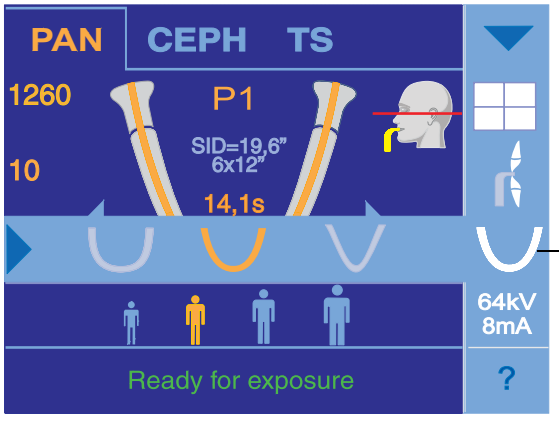
Half-view and individual quadrant exposures

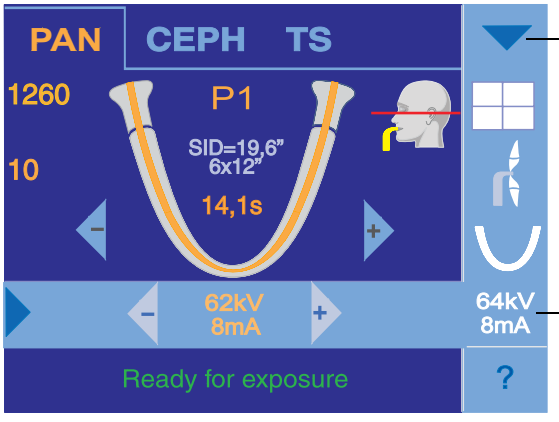
The adjacent illustrations show the X-ray image displays and indicate how the half-views and the individual quadrants are associated with the patient.

Individual quadrant exposures are possible only in the XG Plus full version.

The program duration for individual quadrant exposures equals the program duration for half-view exposures.



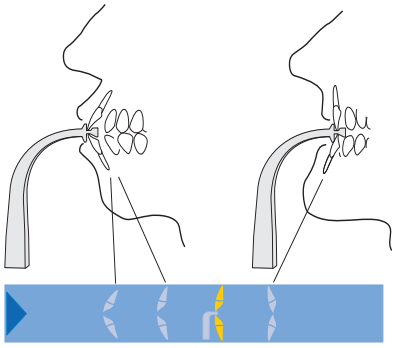




2. Presetting for malocclusions

Here you can preselect one level of retrusion as well as one or two levels of protrusion for programs P1, P2 and P10 including constant magnification and artifact-reduced display.

For preselection touch the corresponding tooth symbol in the submenu line.



3. Presetting for jaw shape

In this submenu you can preselect a normal jaw shape, a V-shaped jaw and a square jaw for programs P1, P2 and P10 including constant magnification and artifact-reduced display.

For preselection touch the corresponding tooth symbol in the submenu line.

4. Manual setting of kV/mA values

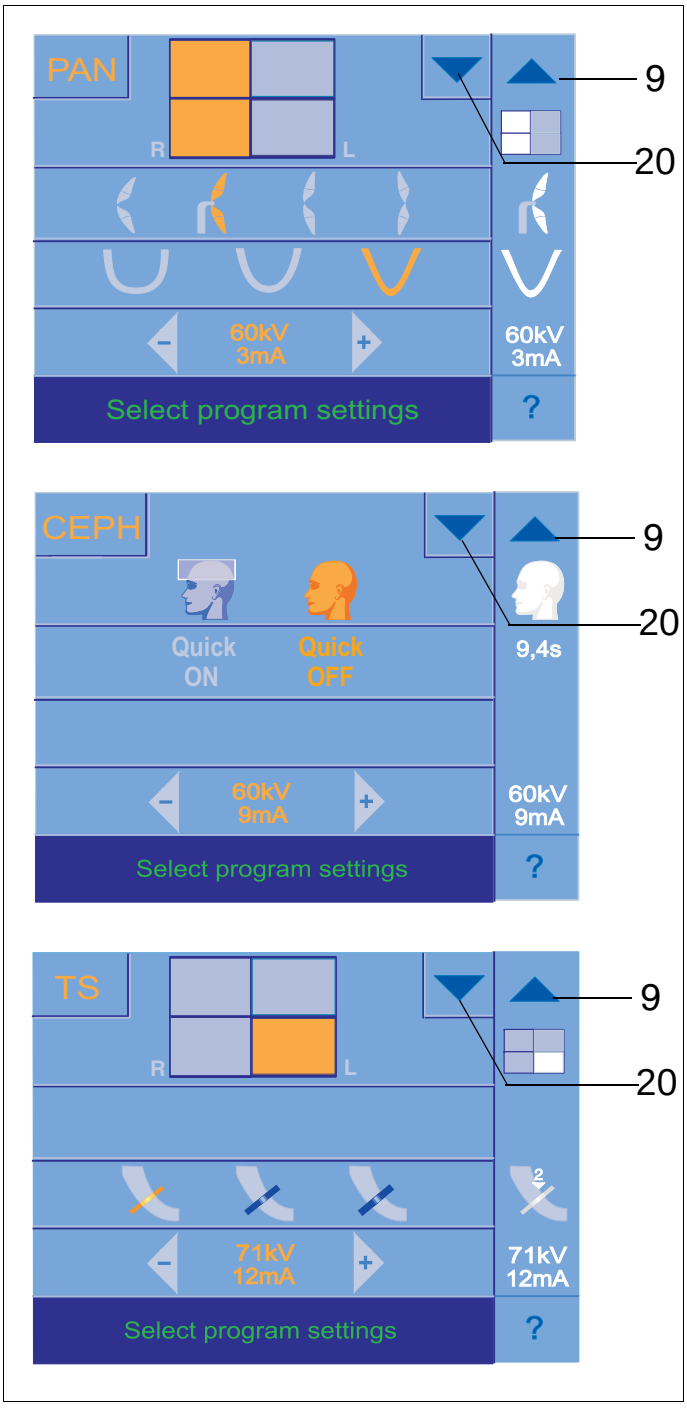
If the default kV/mA combinations do not provide satisfactory results, you can preselect intermediate kV/mA values in this submenu (for all programs) using the –/+ keys in the submenu line.

NOTE

As long as the respective menu line is open, the background is displayed as inactive.

You can close a menu line:

- by touching the blue arrows in the menu line.
- by touching the corresponding symbol in the light bluearea at the right margin.



Basic settings for the entire menu
Level 2

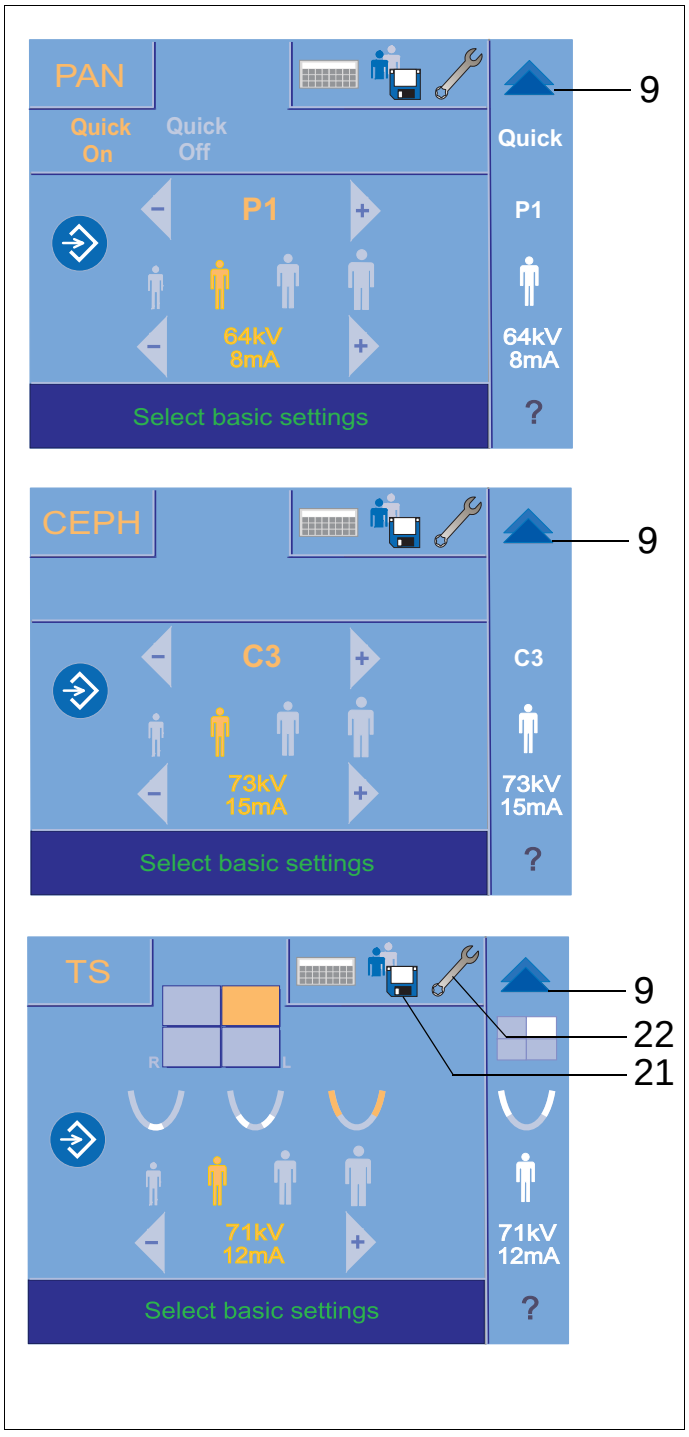
You may also display all of the program settings and make the settings described above in a second program level.

To access the second program level, touch the blue arrow (9) in the upper right corner of the touchscreen; the arrow will point upward then.

After having made your selections, you can return to program level 1 only by touching the blue arrow (9) once again.

NOTE

When you confirm the exposure with the R button, the program settings changed in these submenu lines will automatically be reset to the default settings (except for Ceph Quick shot).



Basic settings menu
Level 3

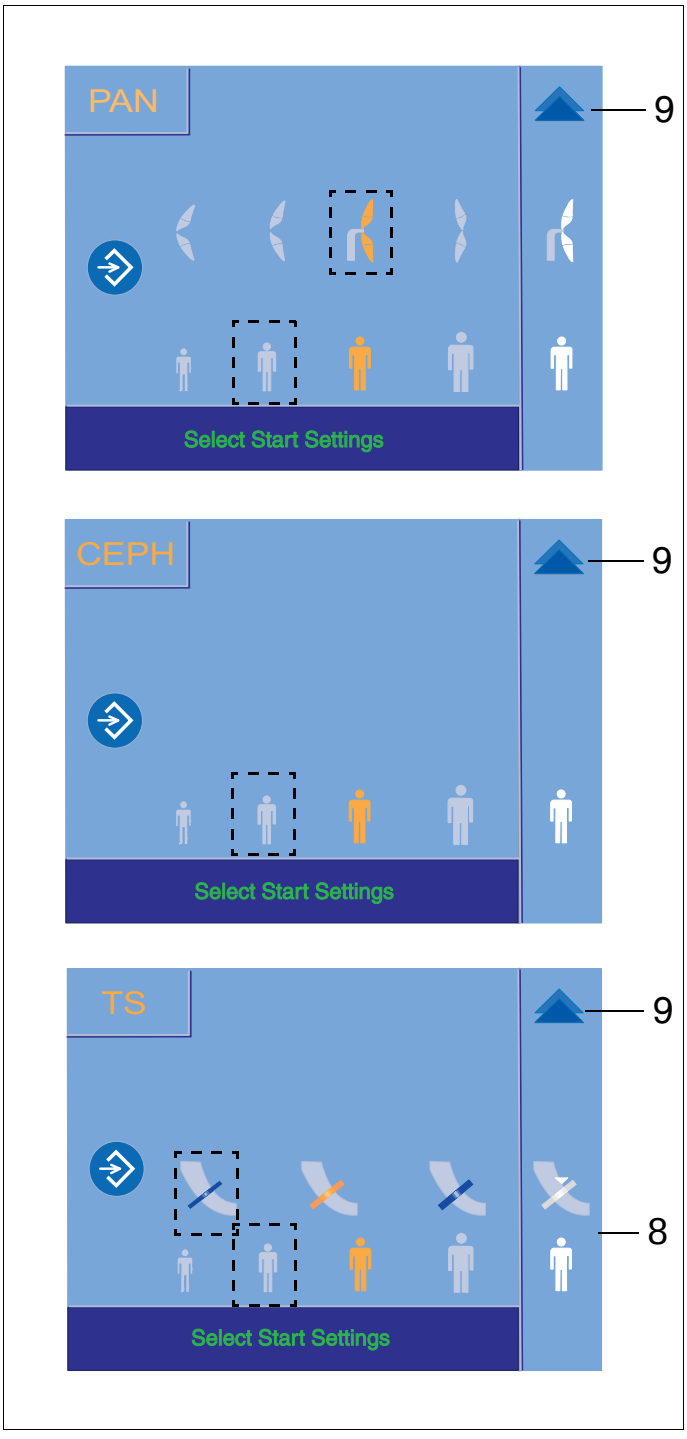
In a third program level, you can freely choose and then save certain exposure parameters for the individual programs.

To access the third program level, touch the downward pointing arrow (20) in the second program level.
The right arrow will become a double arrow then.

You can close this menu again only by touching the blue double arrow (9) in the upper right corner.
The display always returns to the standard menu (program level 1).

ATTENTION

*If you want to change the kV/mA values in the TSA basic settings, make sure to **first** preselect the corresponding quadrant and jaw area.*
The kV/mA adjustment always applies to this preselection only.



Startup settings menu
Level 4

In level 4 you can modify any factory-programmed startup parameters.
They are then displayed after the system is switched on and for each new exposure.
You can reach the 4th level by touching the diskette symbol (21) in the basic settings menu (level 3).

For PAN exposures you can change the abnormality preference (2nd icon from the right, as per factory setting) and the patient icon preference (2nd icon from the left, as per factory setting).

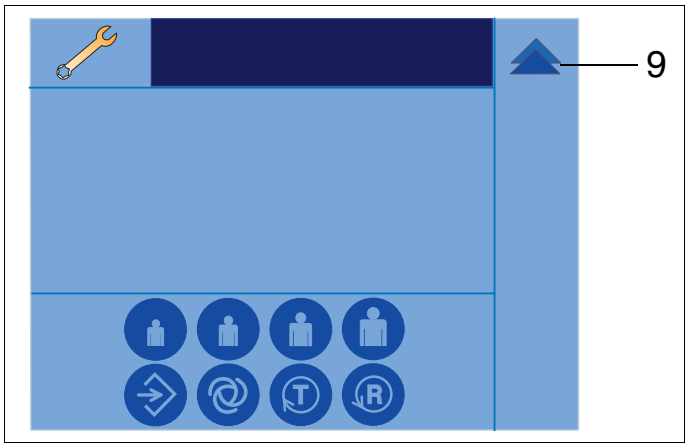
For CEPH exposures you can only change the patient icon preference (2nd icon from the left, as per factory setting).

For TS exposures you can change the slice thickness preference (left icon for the thinnest slice, as per factory setting) and the patient icon preference (2nd icon from the left, as per factory setting).

To change a preference, touch the corresponding icon which is then indicated in orange and displayed in the column (8).
Save the new preference by touching the programming key.

You can close this menu again only by touching the blue double arrow (9) in the upper right corner.
The display always returns to the standard menu (program level 1).

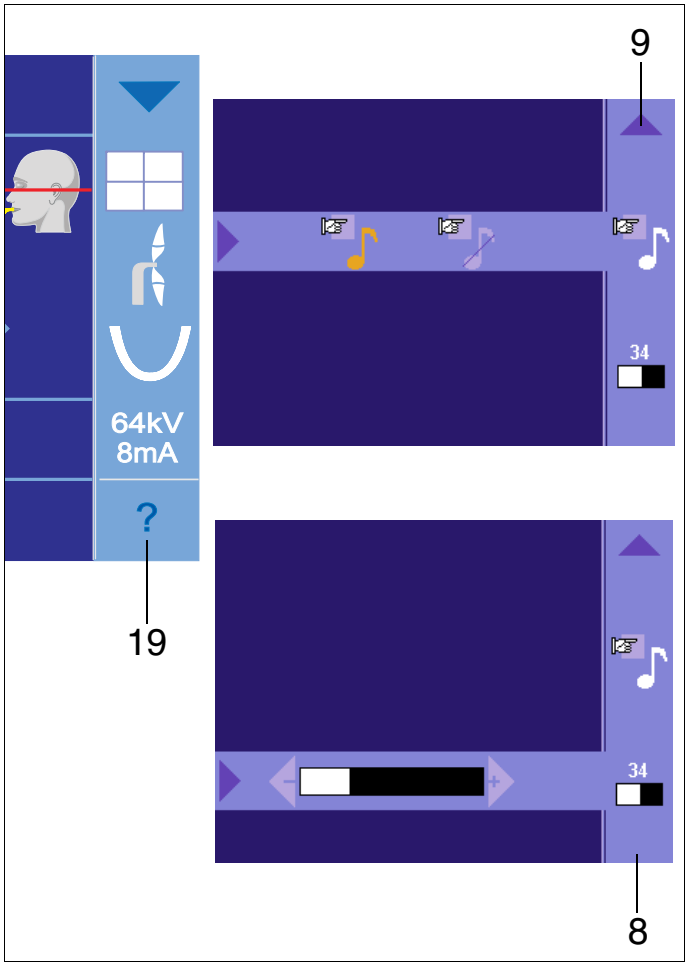
NOTE
The icons framed with a broken line represent the factory settings.



Service menu

The Service menu is intended **for service engineers** only.

The **service engineer** accesses the service menu by touching the wrench symbol (22) in the third program level.



Touchscreen settings

When you touch the question mark (19) in the lower right corner of the touchscreen, the help screen is displayed starting at the first level.

You can open two fly-out menus here by touching the corresponding symbols in column (8).

In the upper fly-out menu you can switch off the clicking tone of the touchscreen by activating the crossed-out musical note symbol.

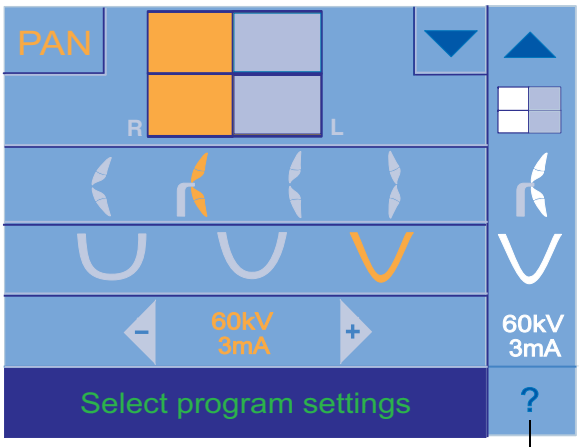
In the lower fly-out menu you can adjust the intensity of the touchscreen display with the –/+ keys. During this adjustment a reference value appears above the symbol in column (8).

NOTE

To set the touchscreen intensity the system must be switched on for at least ten minutes to ensure that the touchscreen has reached its full brightness.
An hour-glass appears during the boot-up phase.
You cannot change the intensity level while the hour glass is displayed.

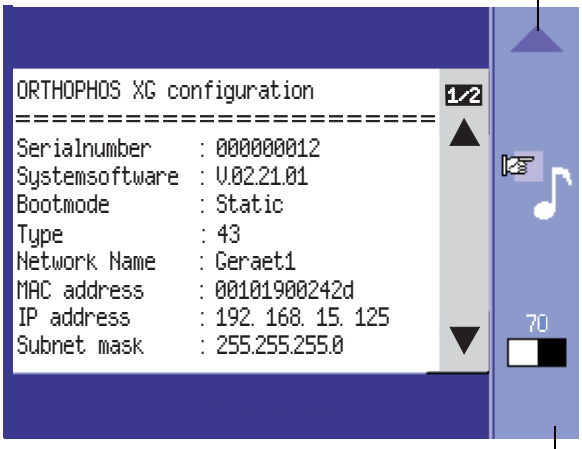
To close a fly-out menu, touch the blue arrow at the left end of the corresponding line or the relevant symbol in column (8).

To return to the previous level, touch the blue arrow (9) at the top of column (8).



19

9



8

Info screen

Starting at level 2, the info screen is displayed when you touch the question mark (19) in the lower right corner of the touchscreen **"ORTHOPHOS XG configuration"**.

System data which may be useful when contacting your service engineer are displayed here.

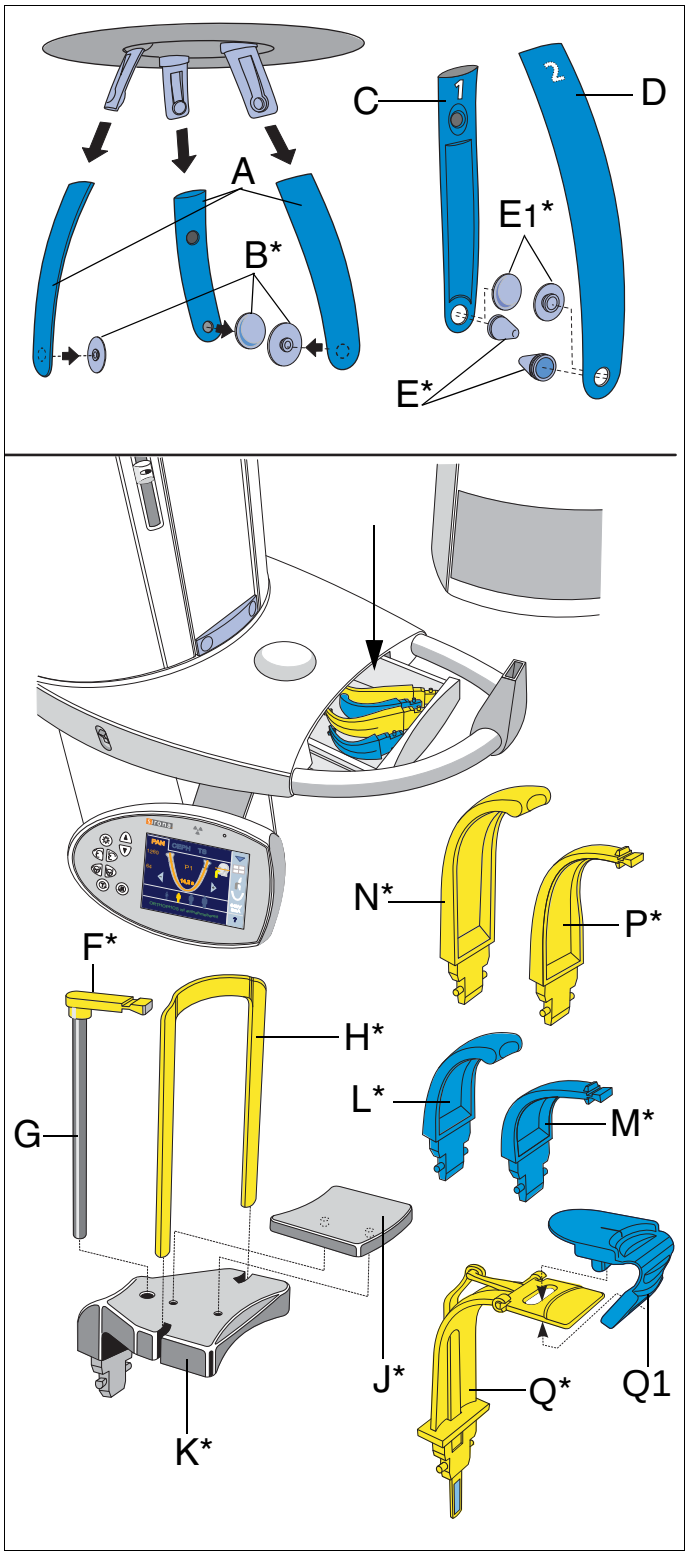
If this list is too long to be displayed all at once, a scroll bar for paging up or down appears on the right.

You can activate the “touchscreen click tone” and “touchscreen intensity setting” fly-out menus from the help screen in column (8) here as well.

To return to the previous level, touch the blue arrow (9) at the top of column (8).

4 Accessories

4.1 Rests and supports for panoramic exposures



The accessories and the hygienic protective sleeves can be stored in the drawer between the two handles.

The forehead support and the temple supports (A) can be removed for cleaning after pressing the corresponding locking button.

Sterilization only in the autoclave at 134°C (273°F), 2.1 bar, 3 min.
All accessories marked with * can be sterilized.

For reorders:

A Forehead support and temple supports
(can be removed for cleaning after pressing the corresponding locking button)
(1 piece) Order No. 59 80 383

B* Contact pads for forehead/temple supports
(1 piece) Order No. 59 80 391

C Temporomandibular joint support "**1**" (right) for temporomandibular joint viewsOrder No. 59 80 599

D Temporomandibular joint support "**2**" (left) for temporomandibular joint viewsOrder No. 59 80 607

E* Ear holders for temporomandibular joint supports
(10 pieces) Order No. 18 88 838

E1* Contact pads for temporomandibular joint supports
(10 pcs) Order No. 59 90 648

F* Bite block
(10 pieces) Order No. 18 88 887

G Rod for bite block
(5 pieces) Order No. 18 88 895

H* Bar for chin rest
Order No. 59 61 461

J* Chin rest
Order No. 14 49 227

K* Chin rest complete,
incl. 5xF, 1xG, H, J, S, T
Order No. 59 81 472

L* Contact segment **blue**
for subnasale
for sinus/PNS and TSA upper jaw views
(5 pcs) Order No. 89 31 552

M* Bite block **blue**
for sinus and TSA upper jaw views
(5 pcs) Order No. 89 21 850

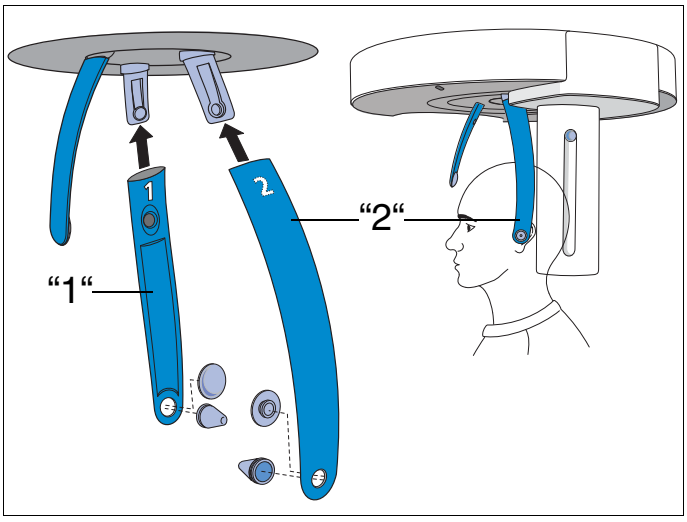
N* Contact segment standard **yellow**
for subnasale
(5 pcs) Order No. 89 31 545

P* Bite block standard **yellow**
(5 pcs) Order No. 89 21 843

Q* Occlusal bite block standard **yellow**
Order No. 62 11 143

Q1 Bite foam for occlusal bite block
(100 pcs) Order No. 61 41 449

4.2 Important when inserting the temporomandibular joint supports

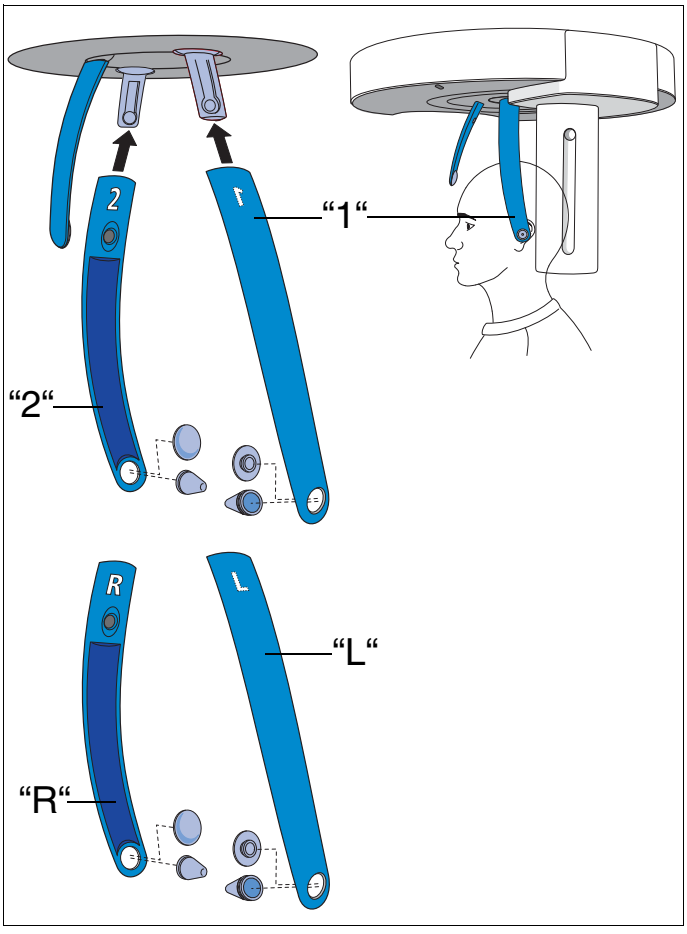


In ORTHOPHOS XG units **delivered during/after November 2006** the holders of the temple supports are tilted slightly toward the rear.

The temporomandibular joint supports are marked “**1**“ **(for right)** and “**2**“ **(for left)**.

Insert the temporomandibular joint supports here as shown in the adjacent drawing.

All of the following drawings and descriptions contained in these operating instructions show this arrangement.



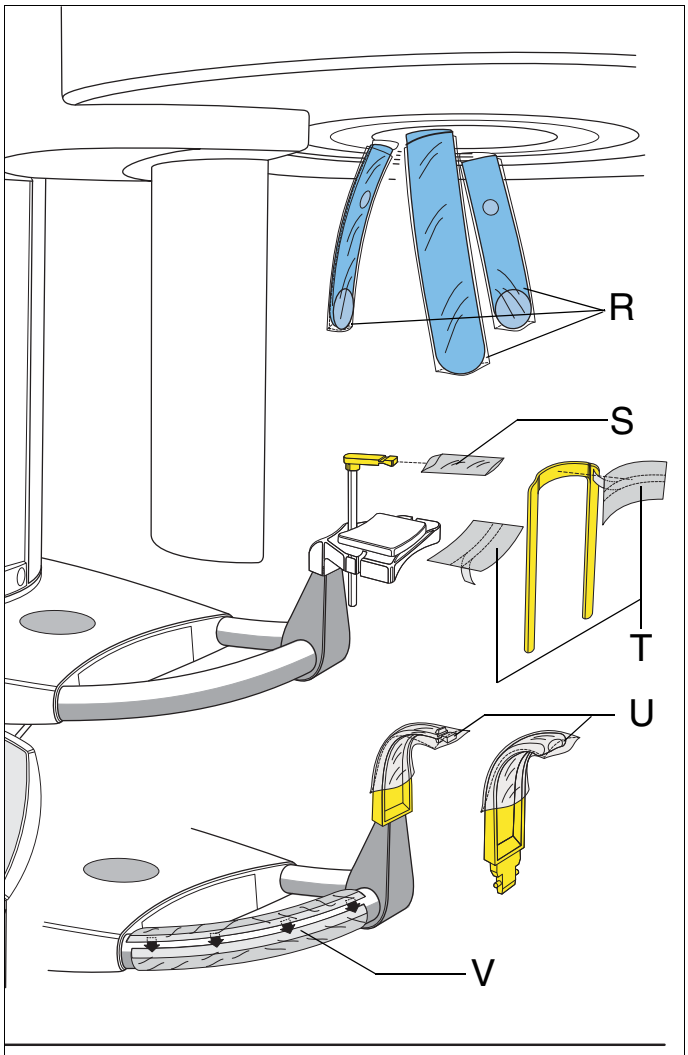
In ORTHOPHOS XG units **delivered until October 2006**, the holders of the temple supports point straight down.

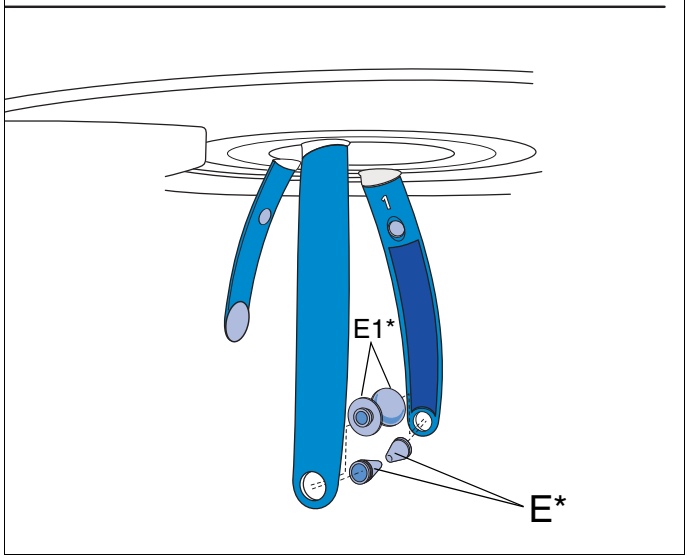
The temporomandibular joint supports marked “**1**“ and “**2**“ must be inserted here so that the support marked **“2“ is positioned on the right** and the one marked **“1“ is positioned** on the left.

For software updates of units delivered before October 2006, the existing temporomandibular joint supports will be inserted in the familiar manner, i.e. marked “**R**“ for right and “**L**“ for left as shown.

For spare parts deliveries, your new temporomandibular joint supports will be marked “**1**“ for **left** and “**2**“ for **right**.

4.3 Protective sleeves for panoramic exposures





Prior to each exposure, the protective sleeves (single use devices) must be fitted.

Single use devices are identified with the symbol shown on the left.

For the sake of clarity, the protective covers have been omitted on the subsequent illustrations.

For reorders of protective sleeves:

R For forehead support and temple supports
(500 pcs) Order No. 59 68 263
Dimensions: 150 mm x 47 mm

S For bite block
(500 pcs) Order No. 33 14 072
Dimensions: 43 mm x 21 mm

T For chin rest and bar
(100 pcs) Order No. 59 32 603
Dimensions: 75 mm x 60 mm

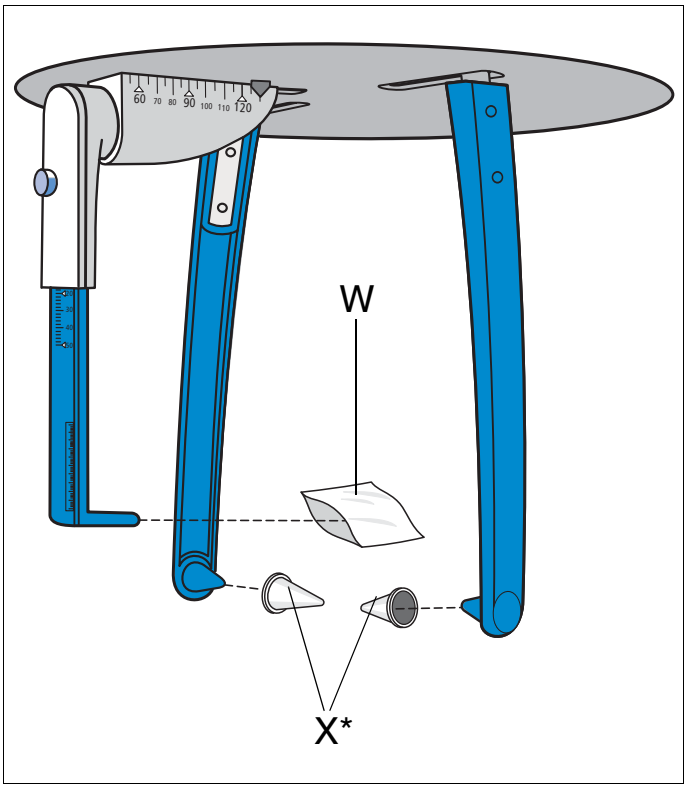
U For bite blocks and contact segments
(500 pcs) Order No. 33 14 080
Dimensions: 80 mm x 40 mm

V Protective foil for handles
Order No. 59 68 255

E* Sterilizable ear holders for temporomandibular joint supports for temporomandibular joint views
(10 pcs) Order No. 18 88 838

E1* Sterilizable contact pads for temporomandibular joint supports for sinus views
(10 pcs) Order No. 59 90 648

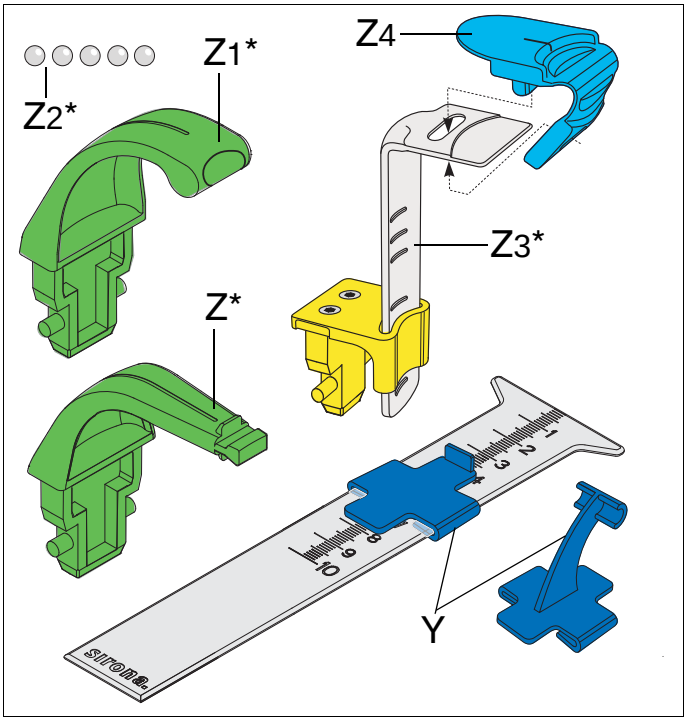
4.4 Protective sleeves for cephalometer



W Protective sleeve for nose support,
single use device
(100 pcs) Order No. 33 14 106

X* Protective caps for ear plugs,
not a single use device (sterilizable)
(20 pcs) Order No. 89 32 261

4.5 Accessories for transversal slices TSA



Y TSA scale, complete
Order No. 58 85 384

Z* Bite block **green**
for maxillary TSA images, where thealveolar ridge of the patient's head is aligned parallel to the floor, to position the patient a little lower in relation to the beam path.
(5 pcs) Order No. 60 32 937

Z1* Contact segmentfor subnasale **green**
for maxillary TSA images, where thealveolar ridge of the patient's head is aligned parallel to the floor, to position the patient a little lower in relation to the beam path.
(5 pcs) Order No. 60 32 945

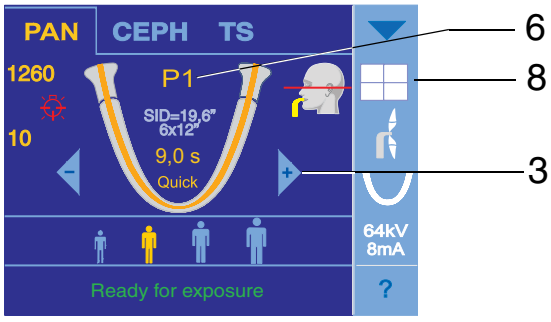
Z2* Set of measuring balls for TSA, 5 mm diameter
(5 pieces) Order No. 61 19 254

Z3* TSA universal bite block
Order No. 61 41 431

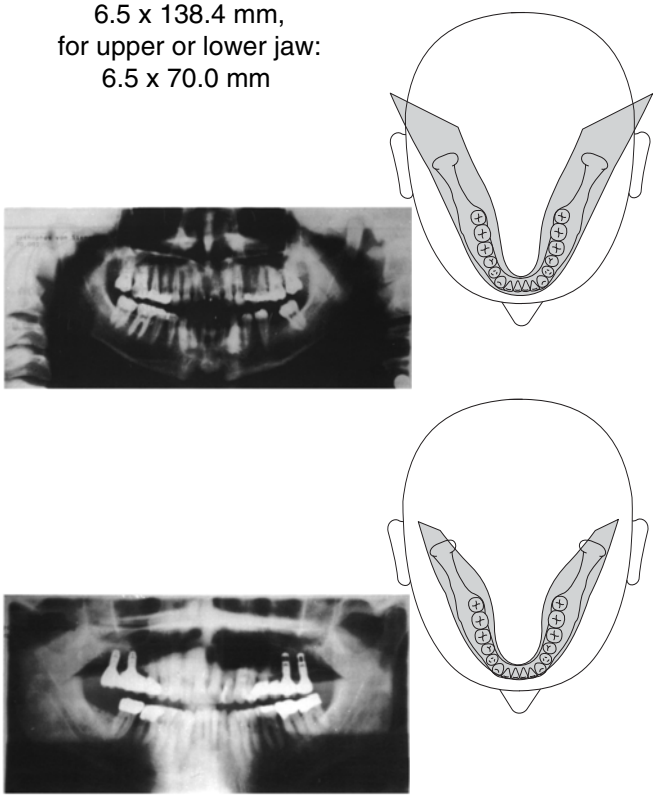
Z4 TSA bite foam for universal bite block
(100 pcs) Order No. 61 41 449

5 Program group panoramic images

5.1 P1 standard panoramic image, P1 A artifact reduced, P1 C with a constant magnification factor of 1.25



Active sensor area CCD PAN
6.5 x 138.4 mm,
for upper or lower jaw:
6.5 x 70.0 mm



To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

To preselect the exposure type, touch the program display (6). A continuous loop will then display all programs one after another, P1, P1 A, P1 C, P1...

In the "Half-view and individual quadrant selection" submenu at the top of column (8) you can preselect whether you want to generate a right or left half-view, or a maxillary or mandibular view (or an individual quadrant view in the full version) (see section 3.2 General touchscreen functions).

P1 Normal view

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the **FH**.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.
- Optional presetting for **malocclusion**
- Optional presetting for **jaw shape**
- **Automatic selection** of the slice width in accordance with temple support settings for different dental arches. Radiation time depends on set temple support width.

P1 A normal view, artifact-reduced

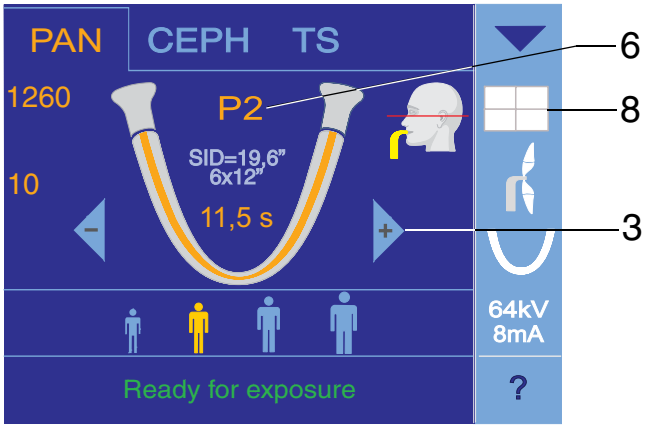
- Settings as for P1
- To prevent metal artifacts in the condylar and molar region and to reduce shadowing caused by the opposite jaw.

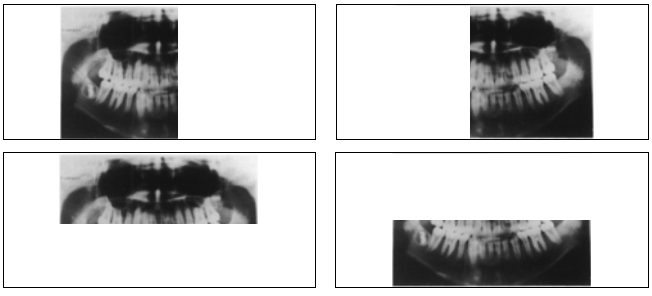
P 1C Normal view with a constant magnification factor of 1.25

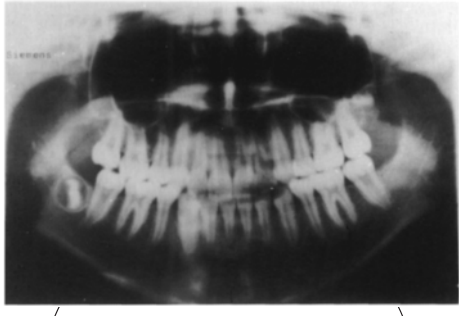
e.g. for implantology

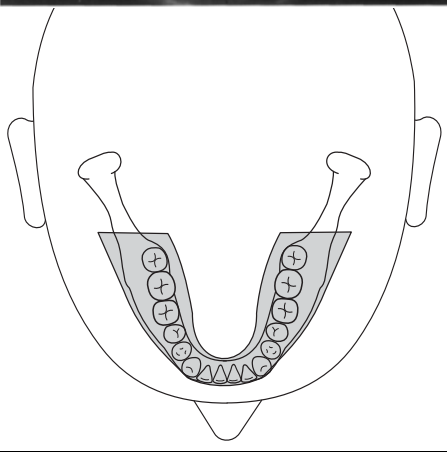
- Settings as for P1

5.2 P2 normal view, limited to teeth without ascending rami, P2 A artifact-reduced, P2 C with a constant magnification factor of 1.25









To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

To preselect the exposure type, touch the program display (6). A continuous loop will then display all programs one after another, P2, P2 A, P2 C, P2...

In the "Half-view and individual quadrant selection" submenu at the top of column (8) you can preselect whether you want to generate a right or left half-view, or a maxillary or mandibular view (or an individual quadrant view in the full version) (see section 3.2 General touchscreen functions).

P2 normal view, limited to teeth
(without ascending rami).

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.
- Optional presetting for **malocclusion**
- Optional presetting for **jaw shape**
- **Automatic selection** of the slice width in accordance with temple support settings for different dental arches. Radiation time depends on set temple support width.

P 2A normal view, limited to teeth, (without ascending rami) **artifact-reduced**

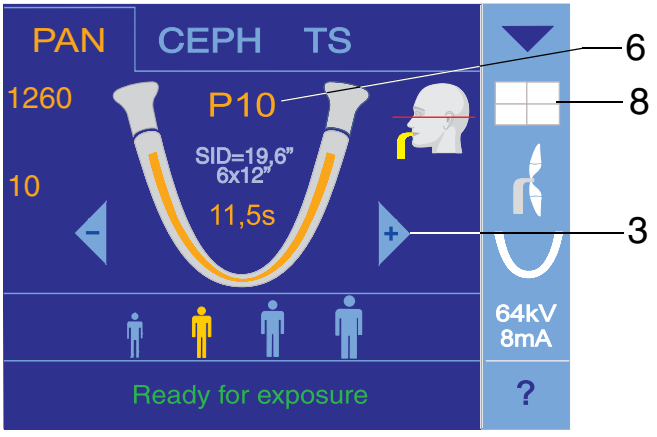
- Settings as for P2
- To prevent metal artifacts in the condylar and molar region and to reduce shadowing caused by the opposite jaw.

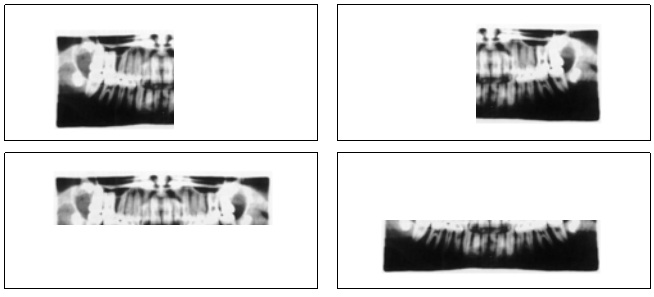
P2 C normal view, limited to teeth, (without ascending rami) **with a constant magnification factor of 1.25**

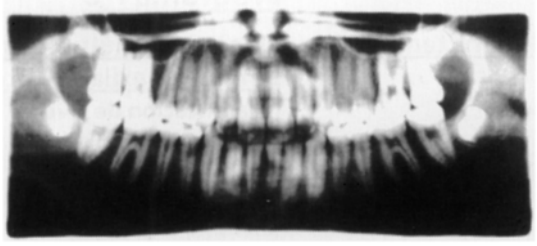
e.g. for implantology

- Settings as for P2

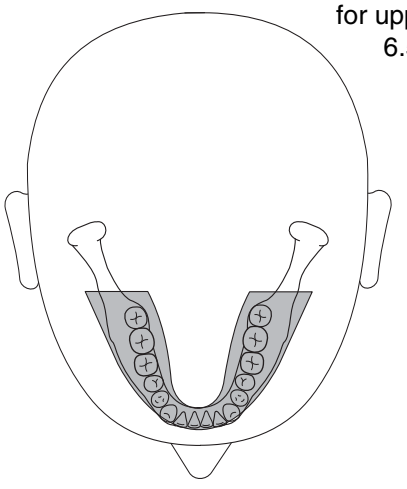
5.3 P10 normal view for children with significant dose reduction, P10 A artifact-reduced, P10 C with a constant magnification factor of 1.25







Active sensor area CCD PAN
6.5 x 127.0 mm,
for upper or lower jaw:
6.5 x 65.0 mm



To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

To preselect the exposure type, touch the program display (6). A continuous loop will then display all programs one after another, P10, P10 A, P10 C, P10...

In the "Half-view and individual quadrant selection" submenu at the top of column (8) you can preselect whether you want to generate a right or left half-view, or a maxillary or mandibular view (or an individual quadrant view in the full version) (see section 3.2 General touchscreen functions).

P 10 normal view (status)

preferably for children

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the FH.
  The line displayed on the head symbol on the touchscreen indicates the reflection line of the light localizer.
- Optional presetting for **malocclusion**
- Optional presetting for **jaw shape**
- **Automatic selection** of the slice width in accordance with temple support settings for different dental arches. Radiation time depends on set temple support width.

P10 A normal view (status) artifact-reduced

preferably for children

- Settings as for P10
- To prevent metal artifacts in the condylar and molar region and to reduce shadowing caused by the opposite jaw.

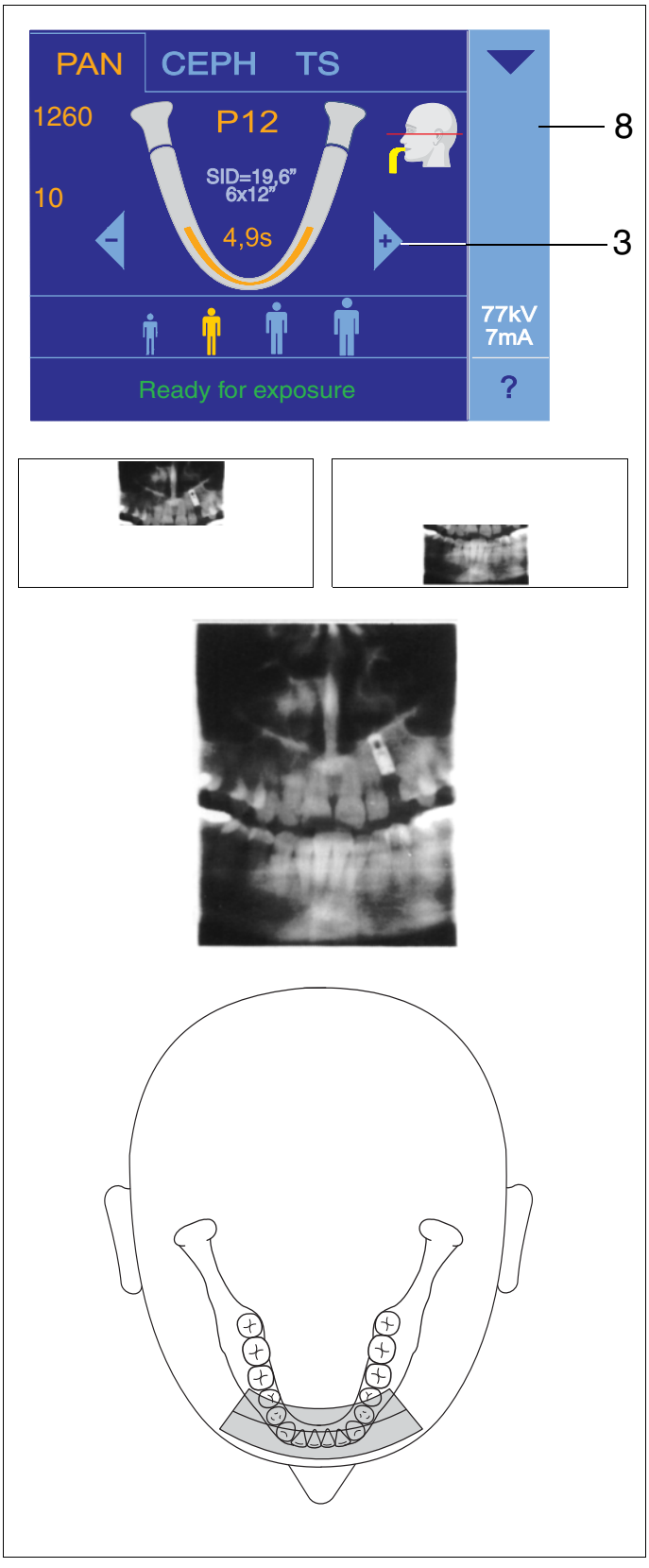
P10 C normal view (status) with a constant magnification factor of 1.25

preferably for children

e.g. for implantology

- Settings as for P10

5.4 P12 Slice thickness, anterior tooth region



P12 Representation of the anterior tooth region with increased slice thickness

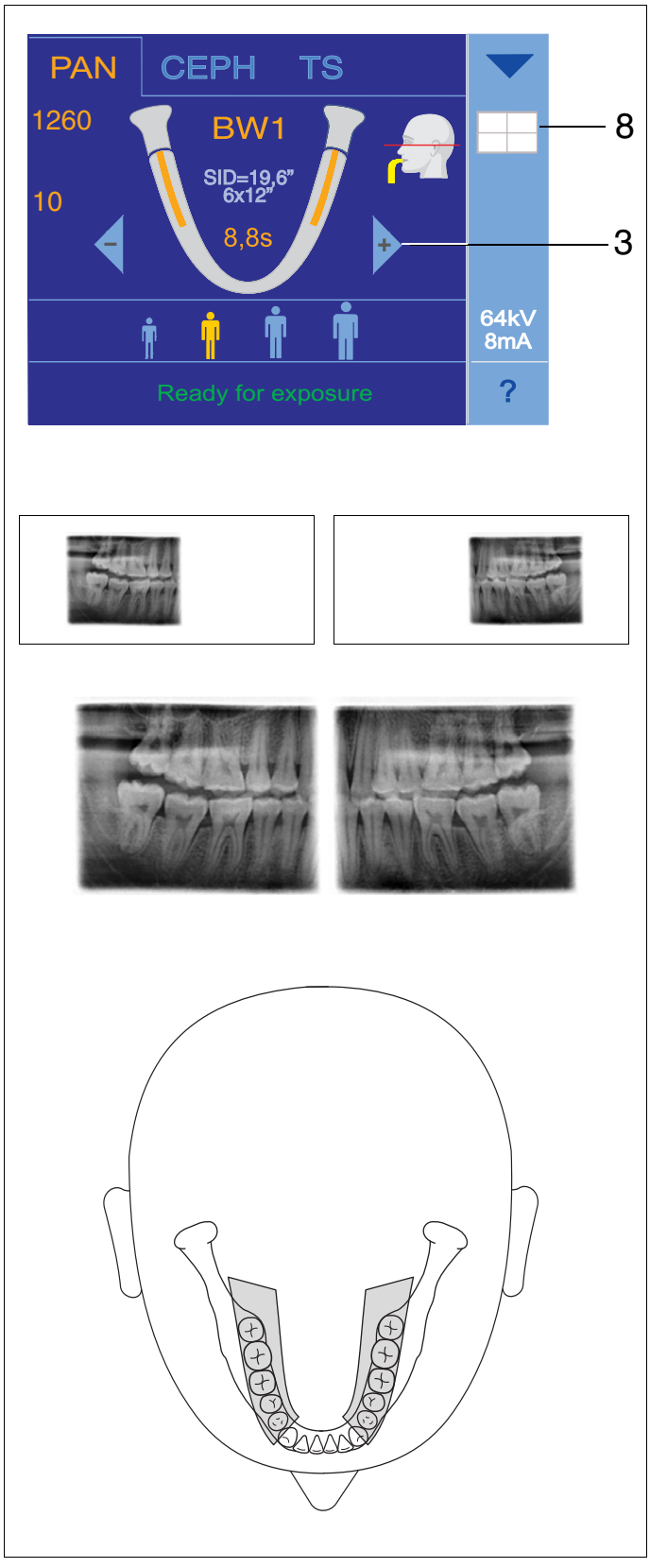
e.g. for implantology

To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

In addition, you can preselect in the “half-view selection” submenu at the top of column (8) whether you want to generate a maxillary or a mandibular view.
(individual quadrants are not possible)

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the FH.
  The line displayed on the head symbol on the touch-screen indicates the reflection line of the light localizer.

5.5 BW1 Bite wing exposures in the posterior tooth region



BW1 Bite wing exposure in both posterior tooth regions with image height limited to the bite wing

To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

In addition, you can preselect in the "half-view selection" submenu at the top of column (8) whether you want to generate a half-view of the right or left side. (see also section 3.2 “General touchscreen functions”; no selection of individual quadrants).

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the FH.
  The line displayed on the head symbol on the touchscreen indicates the reflection line of the light localizer.

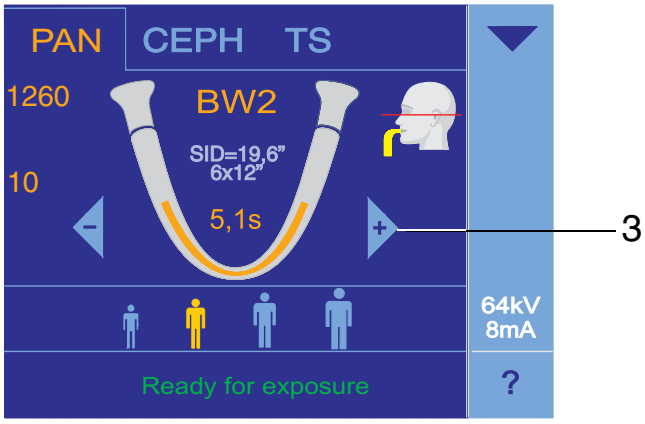
ATTENTION

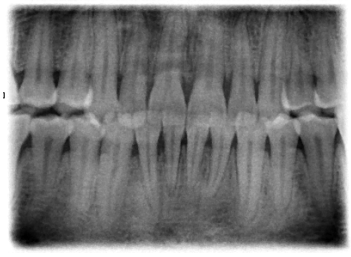
When using this program, do not take exposures of children with the chin rest!

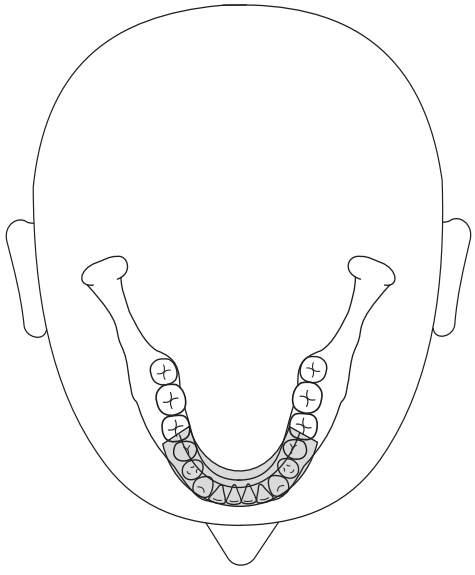
ATTENTION

Do not under any circumstances use the TSA universal bite block (black mark) for this exposure program.

5.6 BW2 Bite wing exposures in the anterior tooth region







BW2 Bite wing exposure of the anterior tooth region with image height limited to the bite wing

To preselect the program, use the arrow keys (3): + (to count forward) or – (to count backward), depending on the starting position; for program sequence see section 3.2.

- **Yellow** bite block or contact segment
  or
  chin rest with bite block rod and bite block or bar.
- Head inclination using the FH.
  The line displayed on the head symbol on the touchscreen indicates the reflection line of the light localizer.

ATTENTION

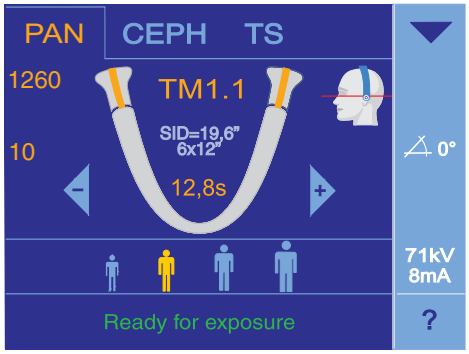
When using this program, do not take exposures of children with the chin rest!

ATTENTION

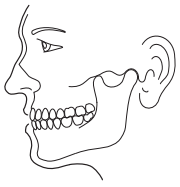
Do not under any circumstances use the TSA universal bite block (black mark) for this exposure program.

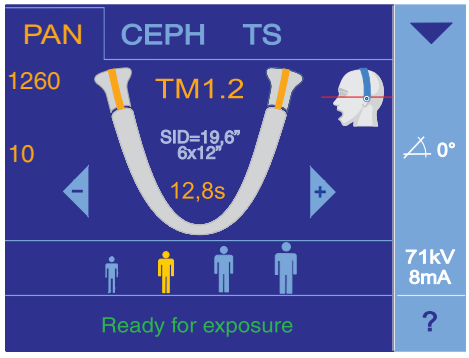
6 Program group temporomandibular joint (TMJ) views

6.1 TM1.1/TM1.2 Temporomandibular joints lateral with closed and open mouth in one image

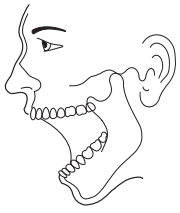


TM1.1

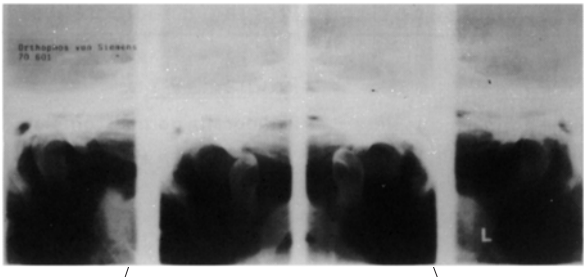


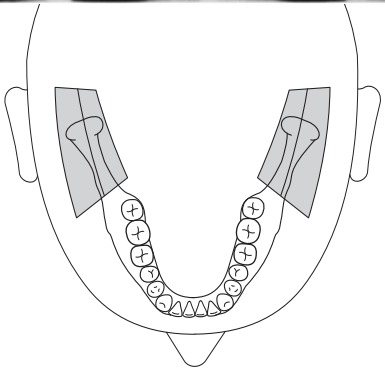


TM1.2



TM1.1 TM1.2 TM1.2 TM1.1





TM1.1 Temporomandibular joints lateral with closed mouth and TM1.2 with open mouth
(4 views in one image)

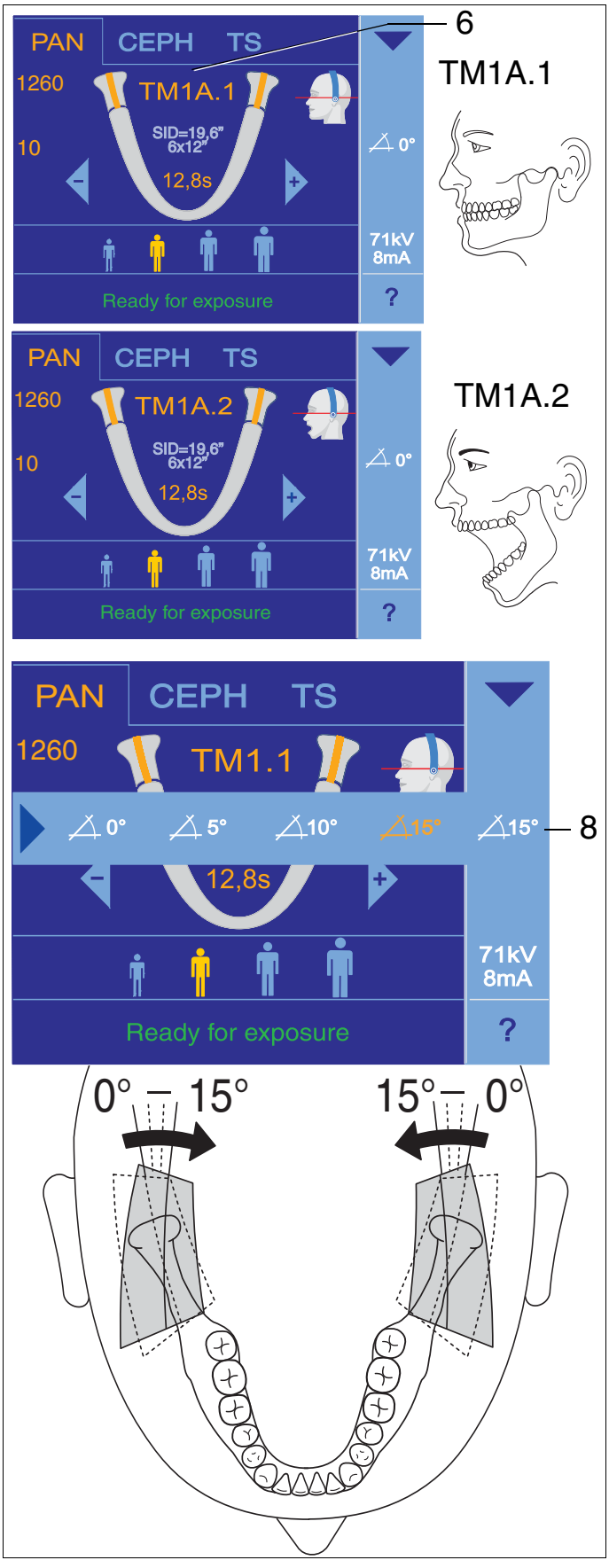
- Insert temporomandibular joint supports "**1**" and "**2**".
- To largely prevent overlaps, head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.
- **Activate TM1.1**.
  On completion of **TM1.1** the message "**Please wait**" appears in the comment line and the unit automatically returns to its starting position. The message "**Ready for exposure**" appears.
- Ask the patient to open his/her mouth and release **TM1.2**.
- Finally, the message "**R button, confirm exposure data**" appears.
- After you have pressed the R button again, the unit returns to its starting position.

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

TM1.1 outer views:
Closed mouth

TM1.2 inner views:
Open mouth



Program extensions:

TM1A.1 Temporomandibular joints lateral with closed mouth and TM1A.2 with open mouth, artifact-reduced

Touch the program display (6) to switch the exposure type from TM1.1 or TM1.2 to TM1A.1 or TM1A.2 (artifact-reduced).

- Preparation as for TM1.1 or TM1.2.
- **Activate TM1A.1**.
  On completion of **TM1A.1** the message “**Please wait**" appears in the comment line and the unit automatically returns to its starting position. The message
  "**Ready for exposure**” appears.
- Ask the patient to open his/her mouth and release **TM1A.2**.
- Finally, the message “**R button, confirm exposure data**” appears.
- After you have pressed the R button again, the unit returns to its starting position.

Angle preselection for temporomandibular joint programs TM1.1/TM1.2 and TM1A.1/ TM1A.2

These programs allow for angle preselection **(0°, 5°, 10°, and 15°)** for the temporomandibular joint area.

When you touch the angle symbol in the “submenu” column (8), a submenu line for angle preselection opens. Select the desired angle; it will now be displayed in white in column (8).

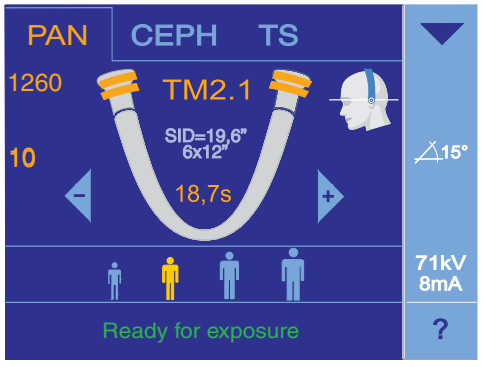
If detailed analyses of the temporomandibular joint are required and the standard projections (0°) are not optimal, the projections can be adjusted with the angle preselection.

The figure shows the directions in which the slice orientation is swiveled with angle preselection.

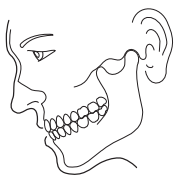
NOTE

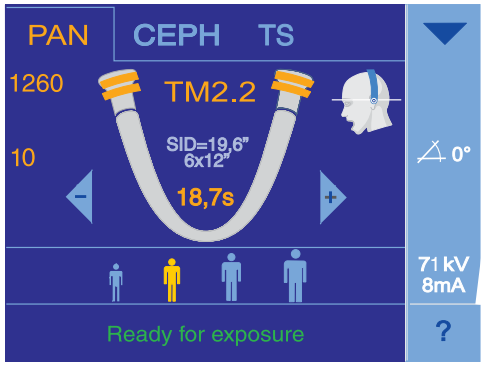
When you confirm the exposure with the R button, the angle setting that was changed in the submenu line will automatically be reset to the default setting 0°.

6.2 TM2.1/TM2.2 Temporomandibular joints in posterior – anterior projection with closed and open mouth in one image

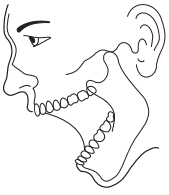


TM2.1

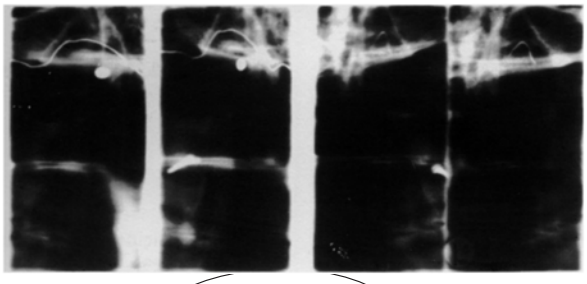


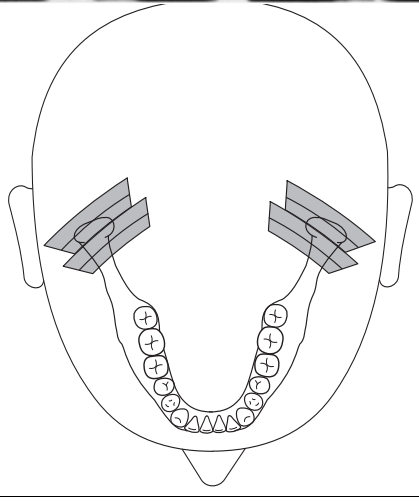


TM2.2



TM2.1 TM2.2 TM2.2 TM2.1





TM2.1 Temporomandibular joints posterior – anterior with closed mouth and TM2.2 with open mouth
(4 views in one image)

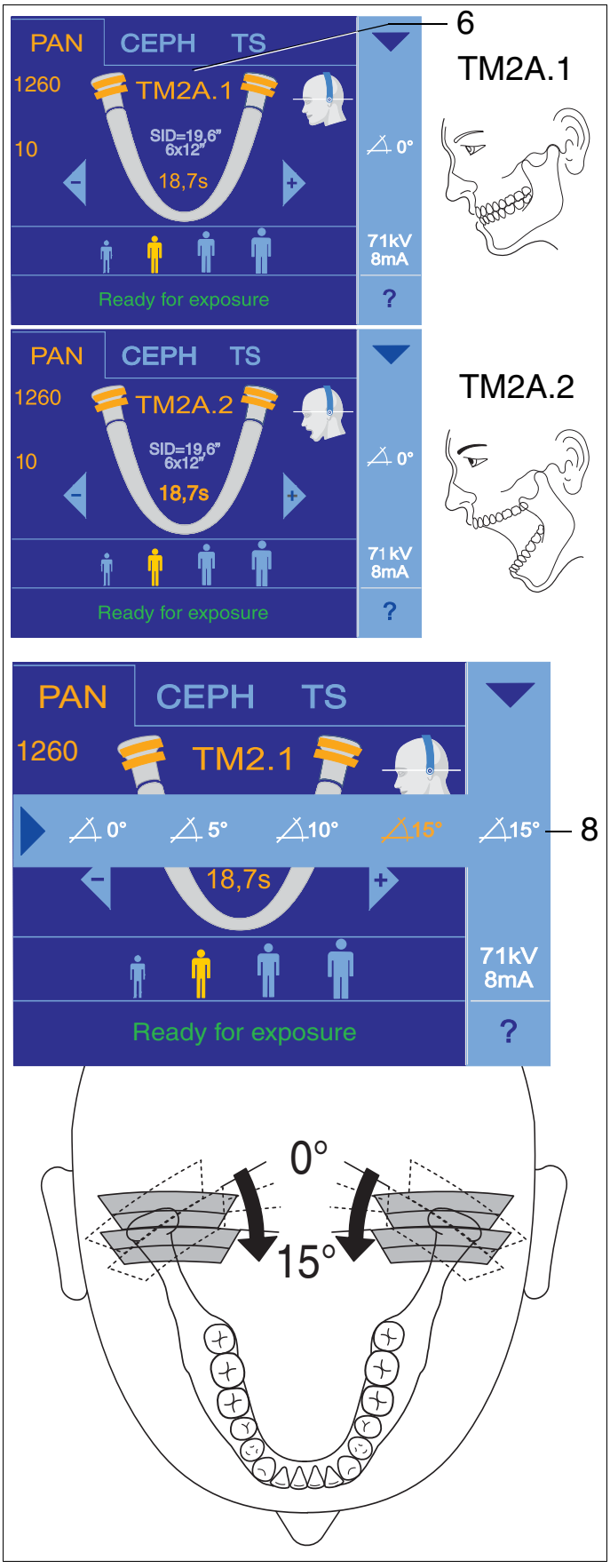
- Insert temporomandibular joint supports "**1**" and "**2**".
- To largely prevent overlaps, **head inclination** towards **anterior** in relation to the FH.
  The line displayed on the touchscreen head icon is used here for orientation only.
- **Activate TM2.1**.
  On completion of TM2.1 the message "**Please wait**" appears in the comment line and the unit automatically returns to its starting position. The message "**Ready for exposure**" appears.
- Ask the patient to open his/her mouth, and release **TM2.2**.
- Finally, the message "**R button, confirm exposure data**" appears.
- After you have pressed the R button again, the unit returns to its starting position.

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

TM2.1 outer views:
Closed mouth

TM2.2 inner views:
Open mouth



Program extensions:

TM2A.1 Temporomandibular in posterior - anterior projection with closed mouth and TM2A.2 with open mouth, artifact-reduced

Touch the program display (6) to switch the exposure type from TM2.1 or TM2.2 to TM2A.1 or TM2A.2 (artifact-reduced).

- Preparation as for TM2.1 or TM2.2.
- **Activate TM2A.1**.
  On completion of **TM2A.1** the message “**Please wait**" appears in the comment line and the unit automatically returns to its starting position. The message
  "**Ready for exposure**” appears.
- Ask the patient to open his/her mouth, and release **TM2A.2**.
- Finally, the message “**R button, confirm exposure data**” appears.
- After you have pressed the R button again, the unit returns to its starting position.

Angle preselection for temporomandibular joint programs TM2.1/TM2.2 and TM2A.1/ TM2A.2

These programs allow for angle preselection **(0°, 5°, 10°, and 15°)** for the temporomandibular joint area.

When you touch the angle symbol in the “submenu” column (8), a submenu line for angle preselection opens. Select the desired angle; it will now be displayed in white in column (8).

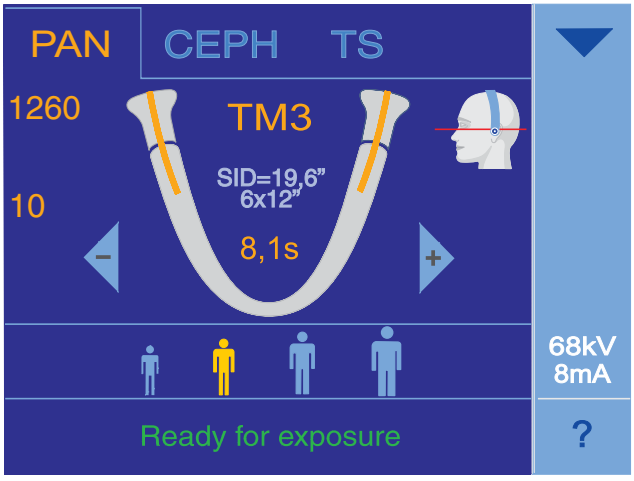
If detailed analyses of the temporomandibular joint are required and the standard projections (0°) are not optimal, the projections can be adjusted with the angle preselection.

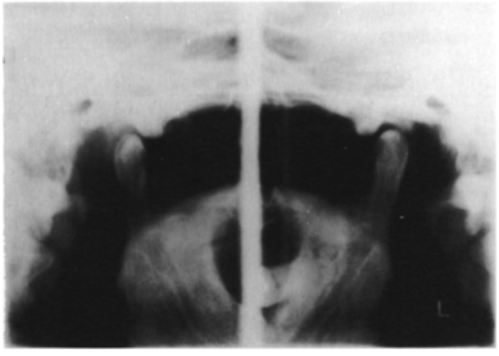
The figure shows the directions in which the slice orientation is swiveled with angle preselection.

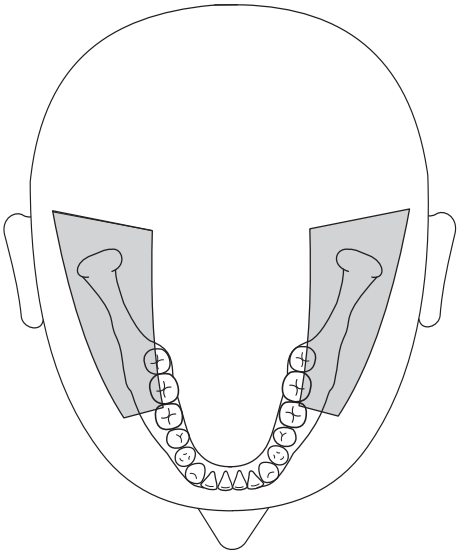
NOTE

When you confirm the exposure with the R button, the angle setting that was changed in the submenu line will automatically be reset to the default setting 0°.

6.3 TM3 Temporomandibular joints lateral, ascending rami







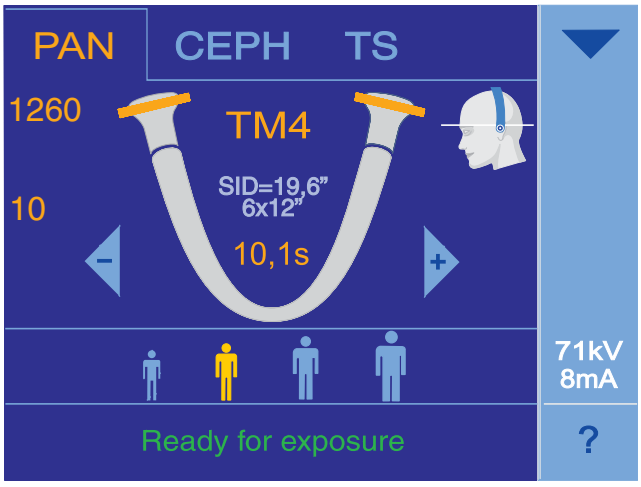
TM3 Temporomandibular joints lateral, ascending rami

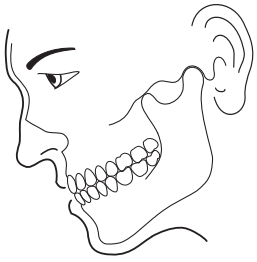
- Insert temporomandibular joint supports "**1**" and "**2**".
- Head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.

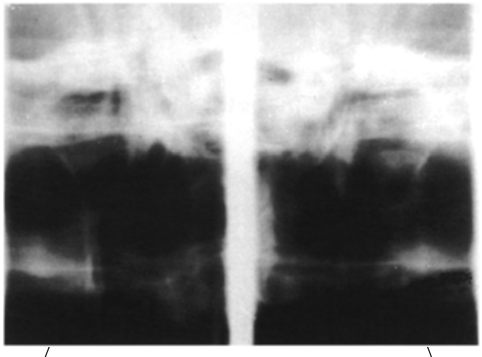
NOTE

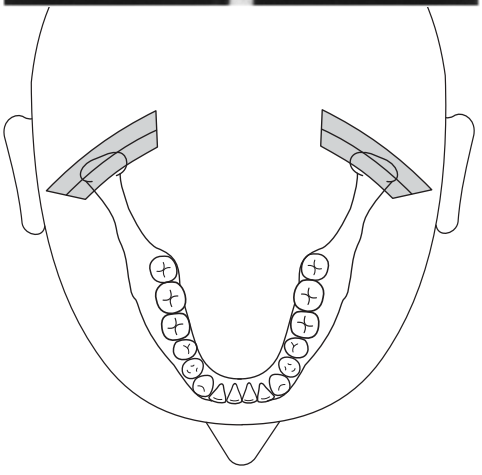
For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

6.4 TM4 Temporomandibular joints in posterior/anterior projection









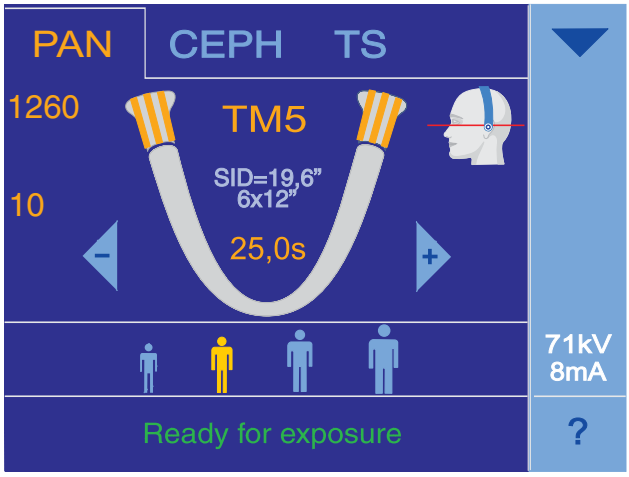
TM4 Temporomandibular joints in posterior/ anterior projection

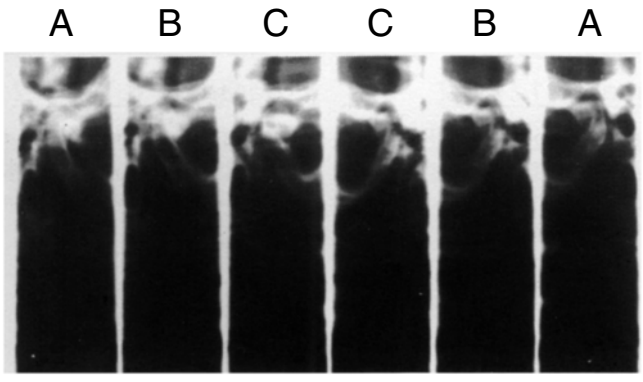
- Insert temporomandibular joint supports "**1**" and "**2**".
- To largely prevent overlaps, **head inclination** towards **anterior** in relation to the FH.
  The line displayed on the touchscreen head icon is used here for orientation only.

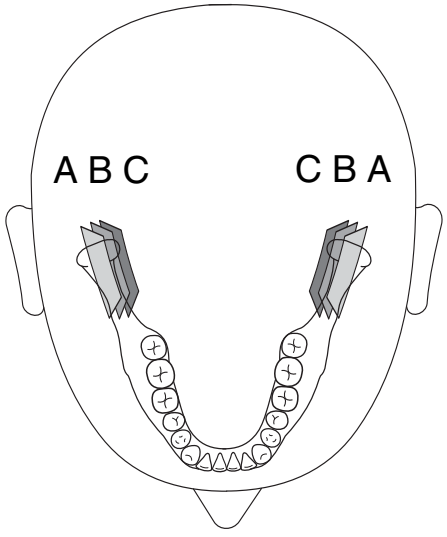
NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

6.5 TM5 Temporomandibular joints lateral, multislice







TM5 Temporomandibular joints lateral, multislice

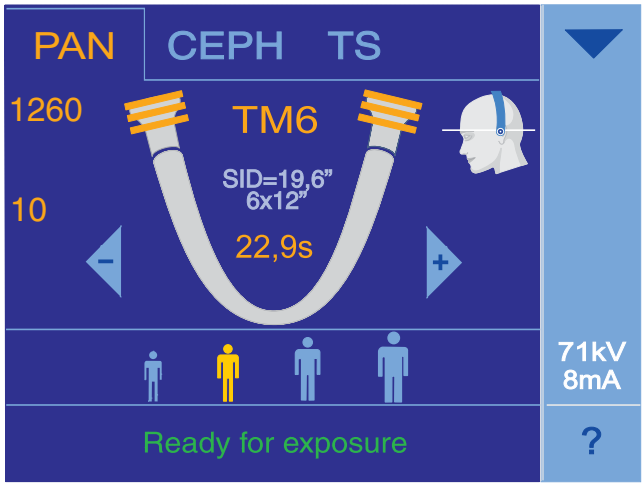
(6 views in one image)

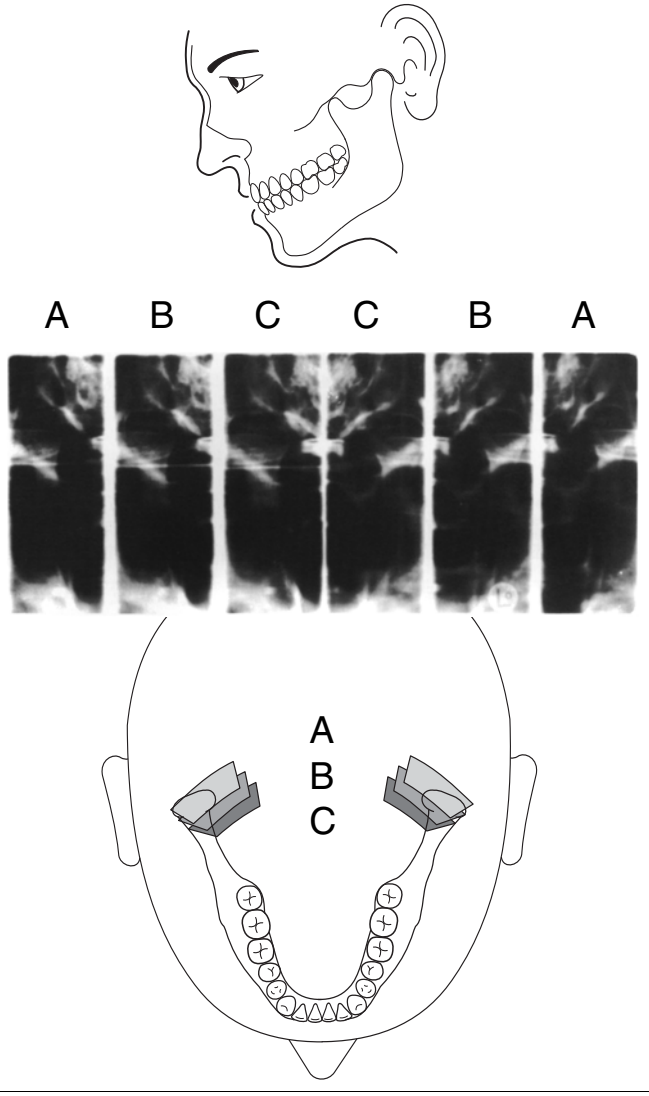
- Insert temporomandibular joint supports "**1**" and "**2**".
- To largely prevent overlaps, head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

6.6 TM6 Temporomandibular joints, multislice in posterior – anterior projection





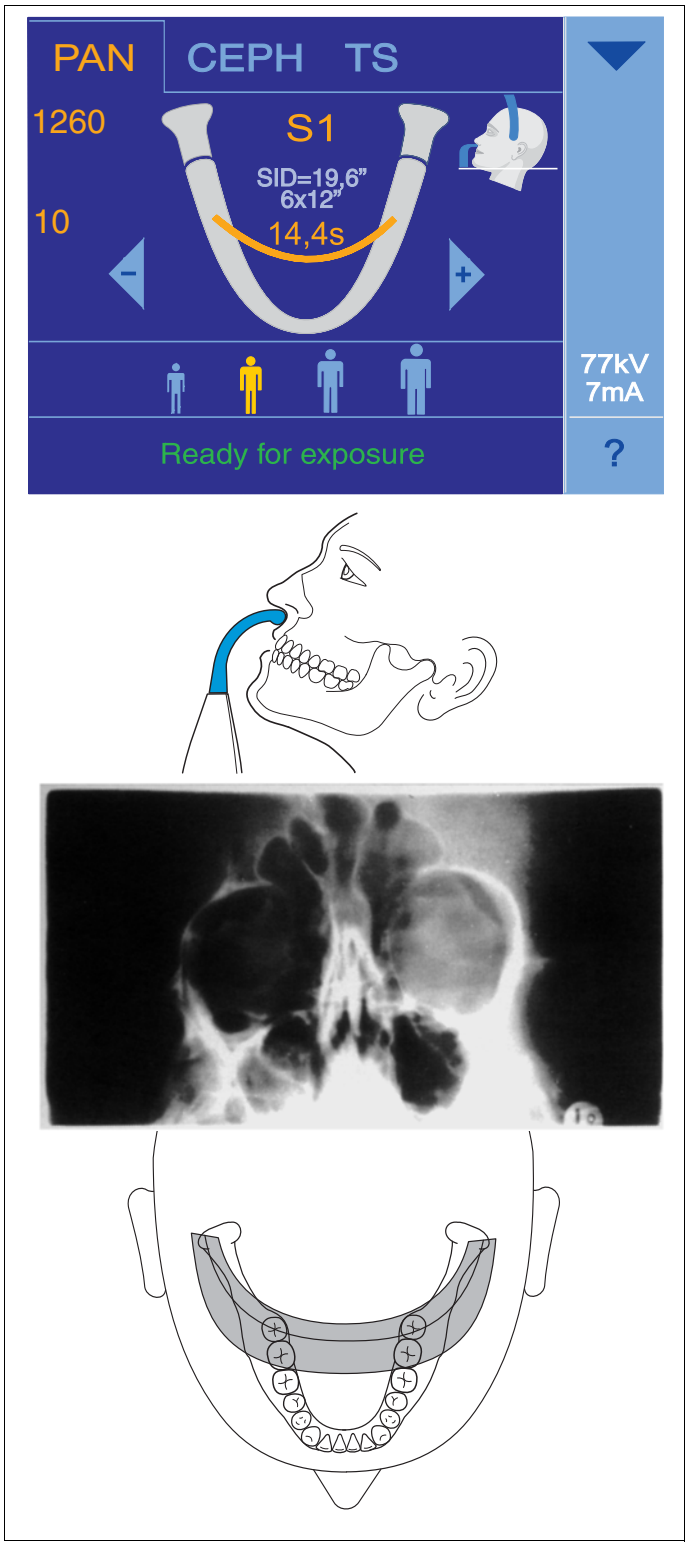
TM6 Temporomandibular joints, multislice, in posterior – anterior projection
(6 views in one image)

- Insert temporomandibular joint supports "**1**" and "**2**".
- To largely prevent overlaps, **head inclination** towards **anterior** in relation to the FH.
  The line displayed on the touchscreen head icon is used here for orientation only.

NOTE
For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

7 Program group sinus views

7.1 S1 Paranasal sinuses



S1 Paranasal sinuses

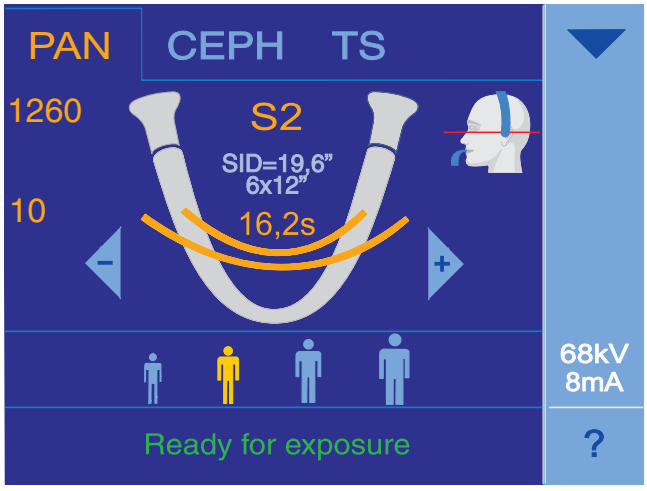
e.g. orbital floor fractures

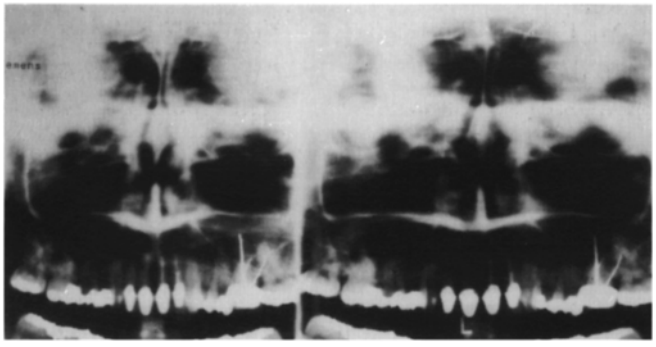
- Fit **blue** contact segment subnasally
- Fit temporomandibular joint supports "**1**" and "**2**" **without ear holders, but with contact pads**.
- Patient's head max. reclined.
  The line displayed on the touchscreen head icon is used here for orientation only.

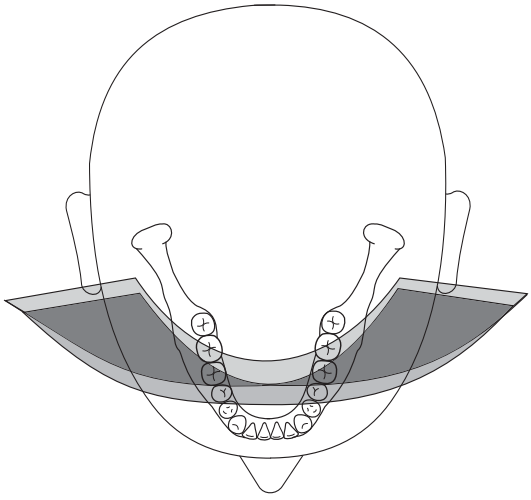
NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

7.2 S2 Maxillary sinuses with two views in one image







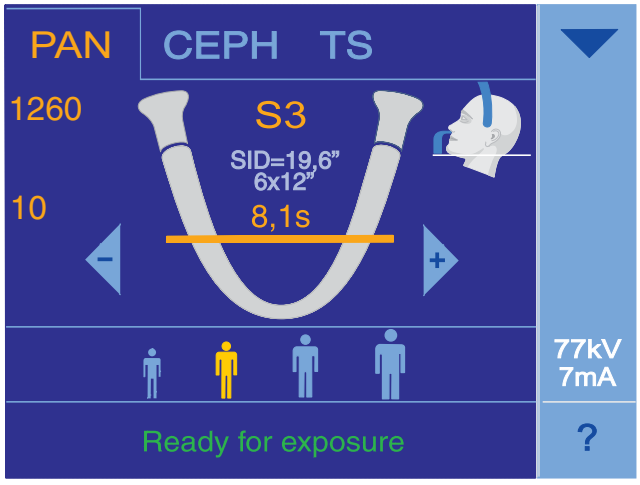
S2 Maxillary sinuses with two views in one image
(enabling a certain depth localization).

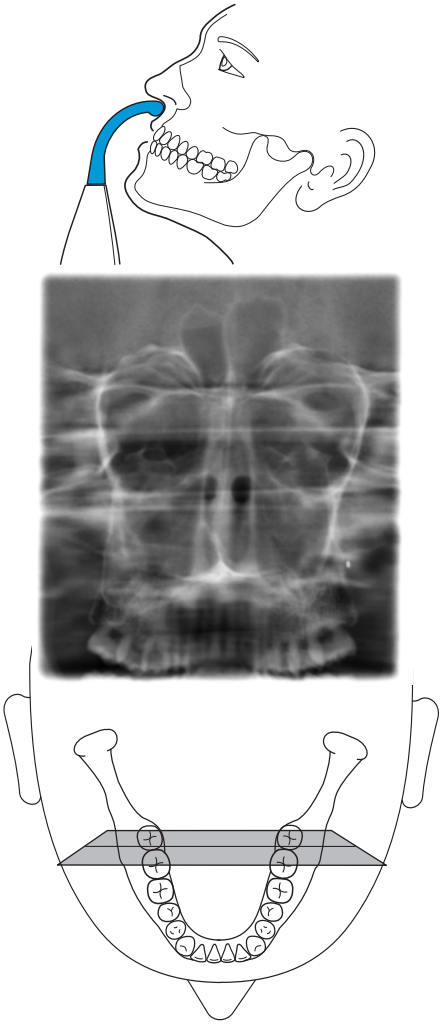
- **Blue** bite block or contact segment.
- Fit temporomandibular joint supports "**1**" and "**2**" **without ear holders, but with contact pads**.
- Head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.
- **Do not release the exposure release button until the message "R button, confirm exposure data" appears in the comment line.**
  (Radiation is released automatically twice).

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

7.3 S3 Paranasal sinuses (linear slice orientation)





S3 Paranasal sinuses (linear slice orientation)

e.g. orbital floor fractures

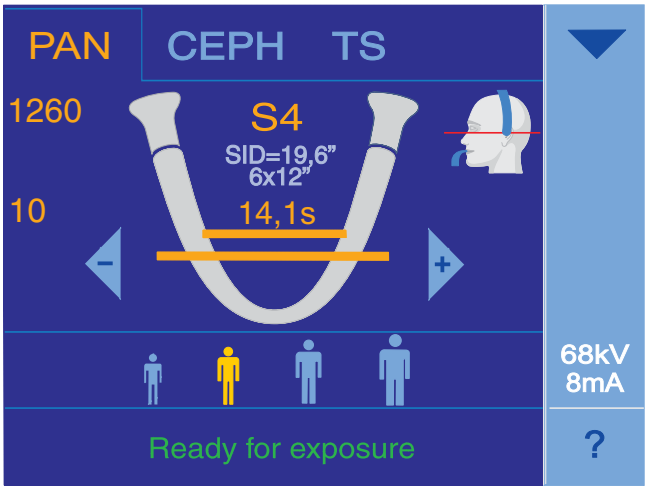
- Fit **blue** contact segment subnasally
- Fit temporomandibular joint supports "**1**" and "**2**" **without ear holders, but with contact pads**.

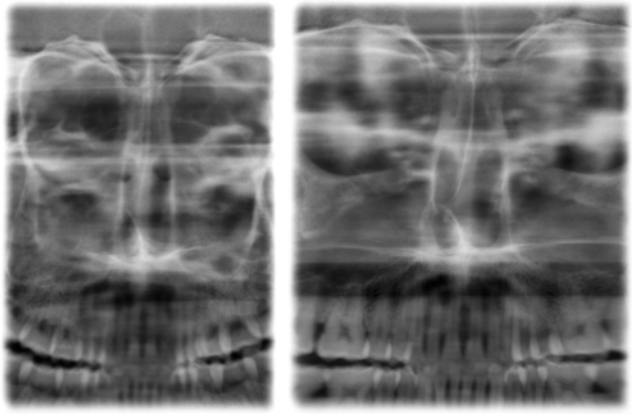
Patient's head max. reclined.
The line displayed on the touchscreen head icon is used here for orientation only.

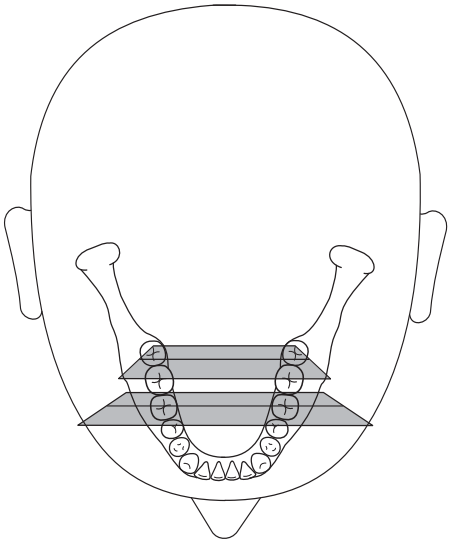
NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

7.4 S4 Maxillary sinuses with two views in one image (linear slice orientation)







S4 Maxillary sinuses with two views in one image (linear slice orientation)
(to allow for a certain depth localization).

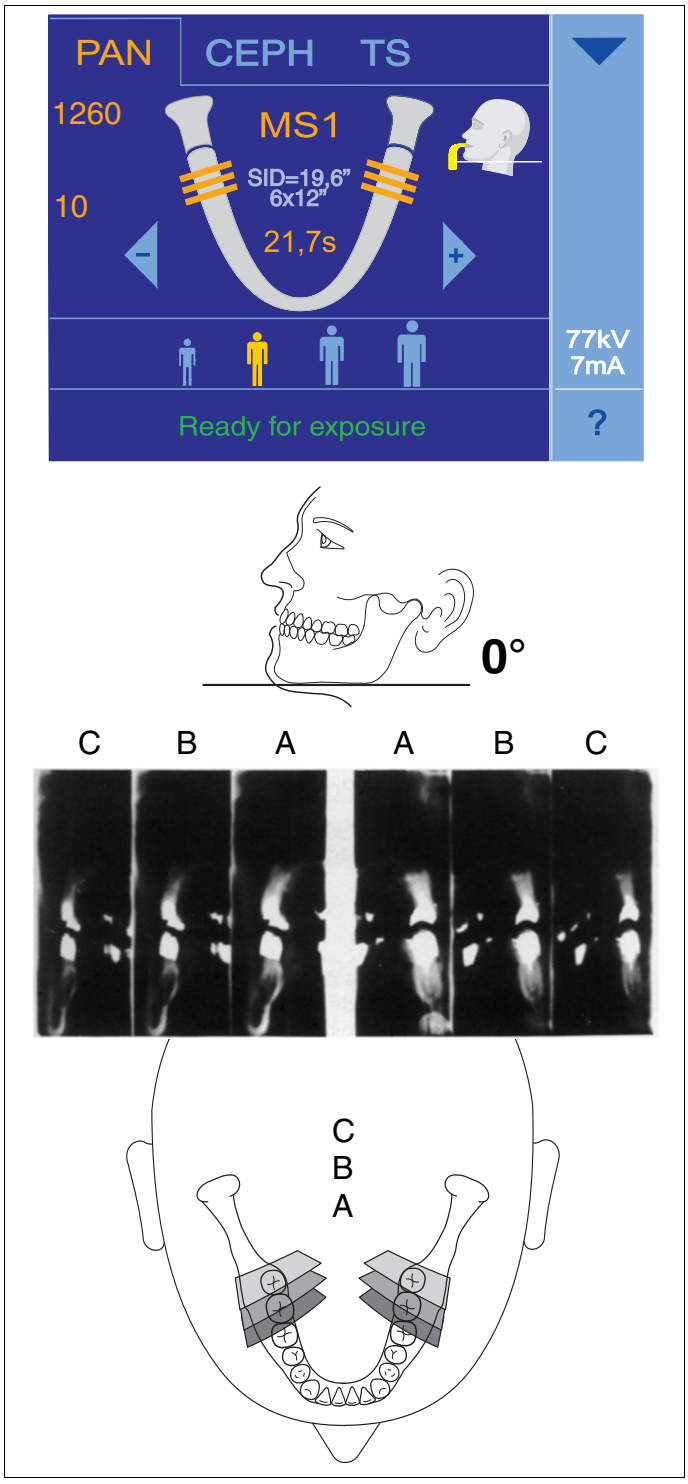
- **Blue** bite block or contact segment.
- Fit temporomandibular joint supports "**1**" and "**2**" **without ear holders, but with contact pads**.
- Head inclination using the FH.
  The line displayed on the touchscreen head icon indicates the reflection line of the light localizer.

Do not release the exposure release button until the message "R button, confirm exposure data" appears in the comment line.
(Radiation is released automatically twice).

NOTE
For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

8 Program group multislice views

8.1 MS1 Multislice (posterior tooth region)

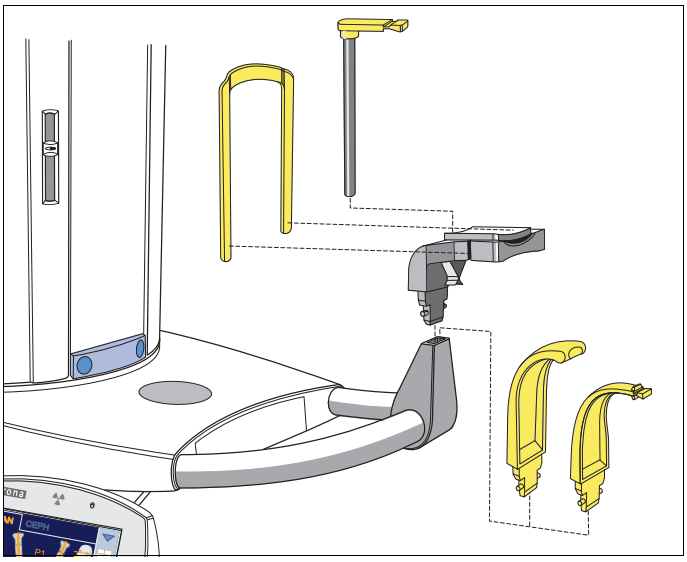


MS1 Posterior tooth region, multislice
(6 views in one image)

- **Yellow** bite block or contact segment.
- Lower edge of mandible horizontal.
  The line displayed on the touchscreen head icon is used here for orientation only.

9 Operation

9.1 Preparing the exposure

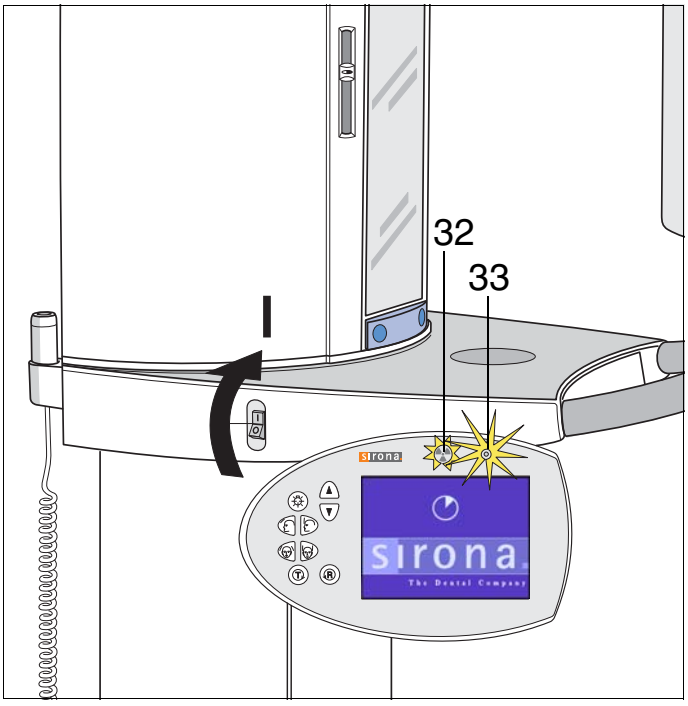


Fitting the accessories

- Push in the **bite block** or **chin rest** until it engages.

For details about use, see **Program groups exposure programs**.

- They unlock automatically upon removal.



Switching the unit on

ATTENTION

Following extreme changes in temperature, condensation may occur; therefore, please do not switch the system on until it has reached normal room temperature (see chapter "Technical description").

- Set main switch (1) to position **I**
  and wait approx. 1 minute.

ATTENTION

Due to the warm-up phase of the screen backlight, screen readability is poor for a few minutes after switching on the system.

- The LED (33) at the top of the Easypad lights up.
- The radiation indicator (32) lights up for approx. one second for a function test.
- The forehead support and temple supports are completely open.

ATTENTION

Never position a patient in the unit during boot-up.
In case of errors that require switching the unit off and back on again, patients must be removed from the unit, at the latest before the unit is switched back on again!

NOTE

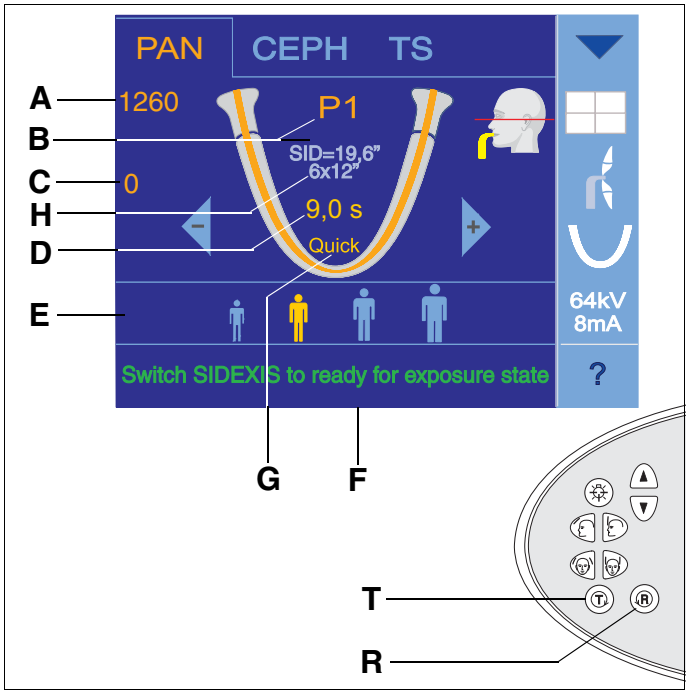
After the unit is switched off with the main switch, the touchscreen on the Easypad remains illuminated for another 3 - 5 seconds.

ATTENTION

After switching the unit off with the main switch, you must wait for approx. 2 minutes before switching it back on.

Displays on the touchscreen

When you switch on the system, the start screen appears briefly; it will disappear automatically after a few seconds.



The selection screen appears.

The selection screen shows the following:

A – Bite block height adjustment value in mm (ranging from 810 to 1815 mm) from the last patient set.

B – The exposure program which was last used

C – The basic value 0 mm of the completely opened forehead support.

D – The expected exposure time for the preselected program

E – The patient symbol which was last preselected with the related kV/mA combination

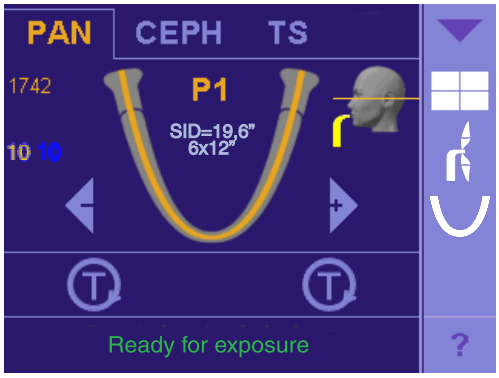
F – Help messages in the comment line

G – Quickshot display – ON (visible)/OFF (hidden) for reduction of cycle time

H – Upper display – focus/sensor distance
Lower display – maximum exposed area

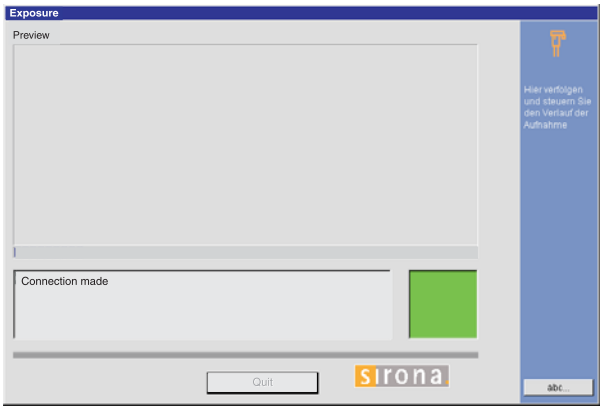
The preselected settings are represented in orange color.

- Briefly press the return key **R** to bring the rotating element into its position for positioning.



NOTE

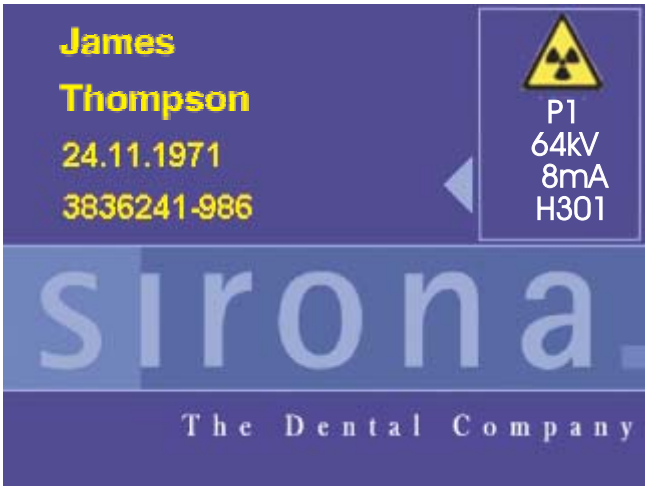
*After the **T** key is pressed, a **test cycle** of the rotating element can be triggered **without radiation**.*
*After the **T** key is pressed, the adjacent display appears on the touchscreen without the kV/mA value, exposure time and patient symbols. Two test cycle symbols appear instead of the patient symbols.*
*To quit the test cycle mode, press the **T** key once again.*



Switch SIDEXIS to ready for exposure state

- Make the **SIDEXIS program on the PC ready for exposure** for PAN (XP)/CEPH (XC) or TS (XS) images. (see **SIDEXIS**, Operator's Manual).

  As long as no connection with SIDEXIS is established, the message **"Switch SIDEXIS to ready for exposure state"** is displayed in the comment line of the Easypad touchscreen.



Once SIDEXIS is ready for exposure, the welcome screen with the selected patient data from SIDEXIS appears on the Easypad touchscreen.

It shows the **first name, last name, date of birth and card index number** of the patient currently registered in SIDEXIS.
The right upper corner shows the radiation symbol, the program number with the associated kV/mA values, and a help message H.

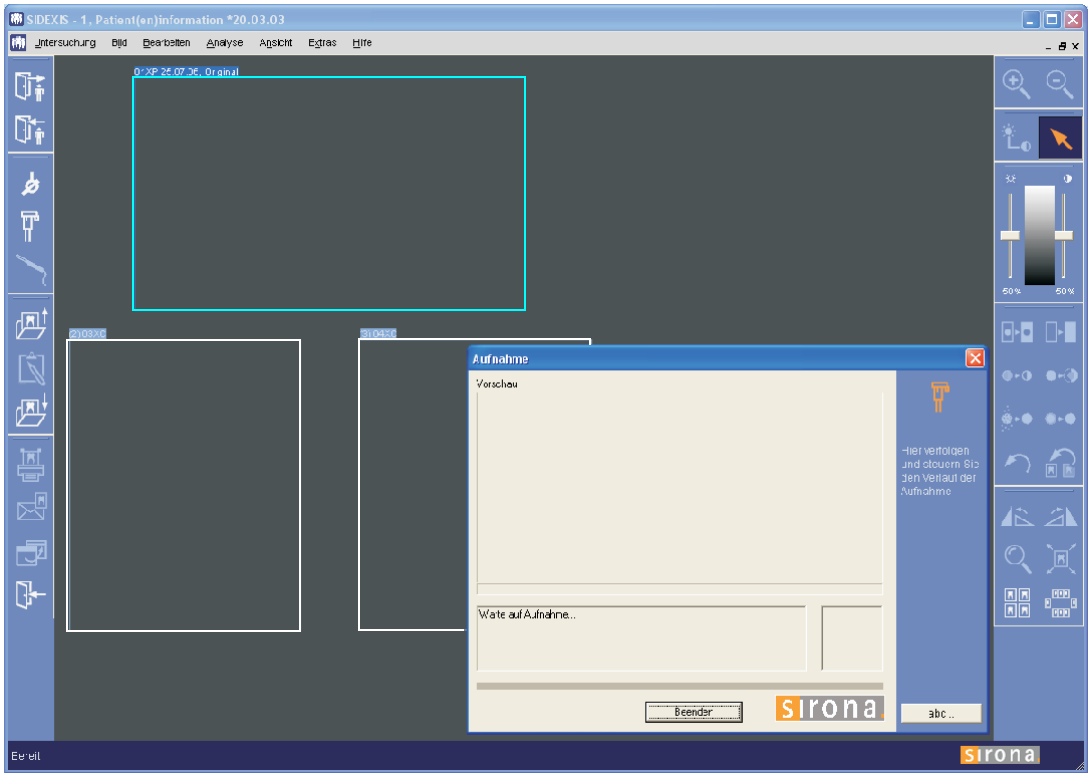
When you touch the screen, the welcome screen disappears and the selection screen reappears.

NOTE

If you wish to suppress this entire screen display or individual pieces of information displayed there, your service engineer can disable the corresponding data upon request.

9.2 Optional: Taking exposures from a SIDEXIS exposure template

- Select patient and exposure template and get the SIDEXIS system ready for exposure.

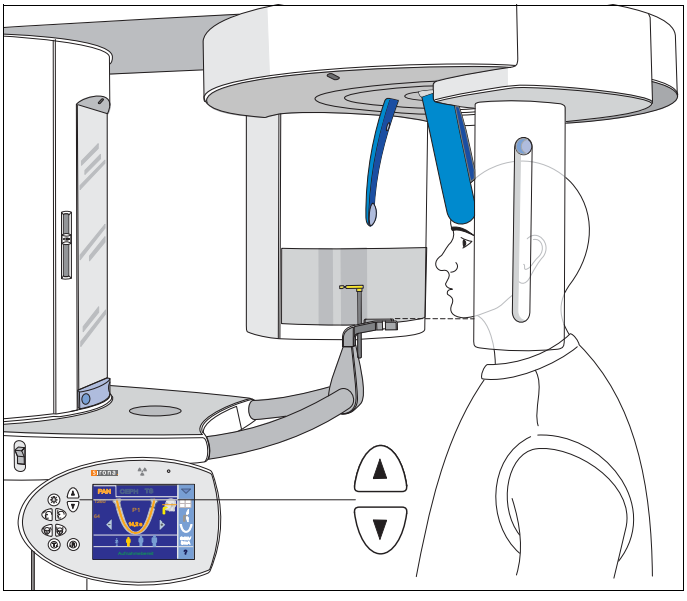


- When SIDEXIS is ready for the first exposure of the template, the welcome screen with the selected patient's data from SIDEXIS appears on the Easypad. When you touch the screen, the welcome screen disappears.
- As soon as an exposure has been executed and arranged in the prepared window, the next exposure readiness is automatically issued by SIDEXIS until all of the exposures in the template have been executed.

9.3 Positioning the patient

Preparations

- Ask the patient to **take off** all **metallic objects** such as glasses and jewelry in the head and neck area as well as all removable dental prostheses.
  The tray in front of the control mirror is used for depositing jewelry.
- The movements of the unit must not be obstructed by physical constitution nor clothing, dressings, wheelchairs or hospital beds! Perform a test cycle with the T key (see also "**General safety information**").
- Fit the bite block or contact segment and the chin rest, see chapter entitled **Exposure program groups**.



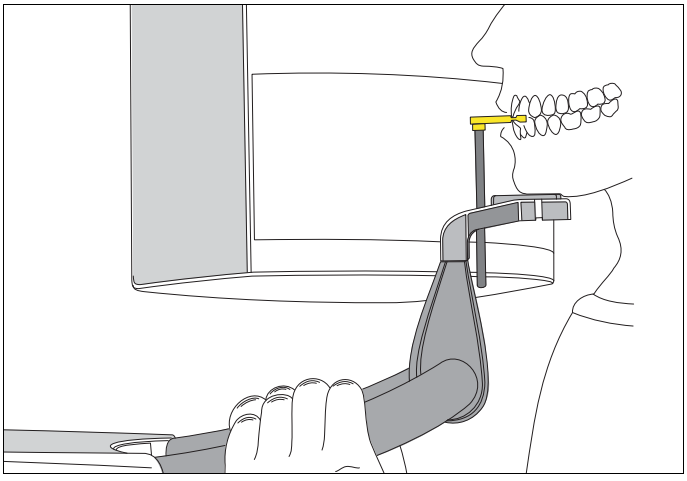
Exposure with chin rest and bite block

- The patient places himself or herself in front of the control mirror.
- Using the "**up**" or "**down**" arrow key, adjust the height of the unit so that **the chin of the patient and the chin rest are at the same height**.

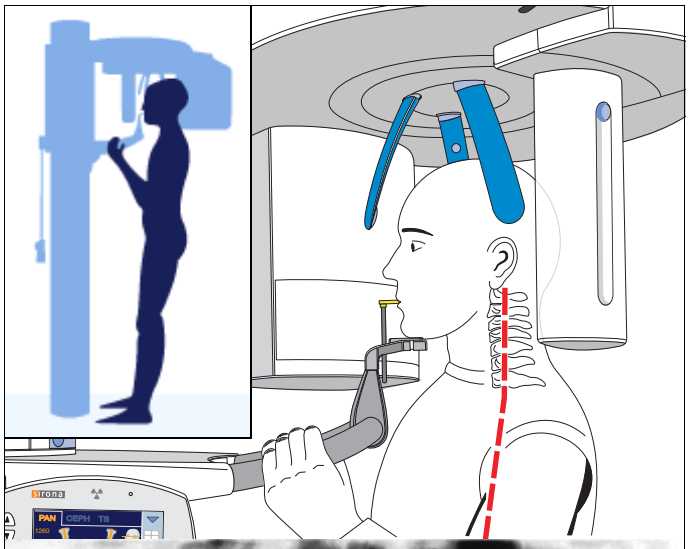
The motor movement is accompanied by an acoustic signal.

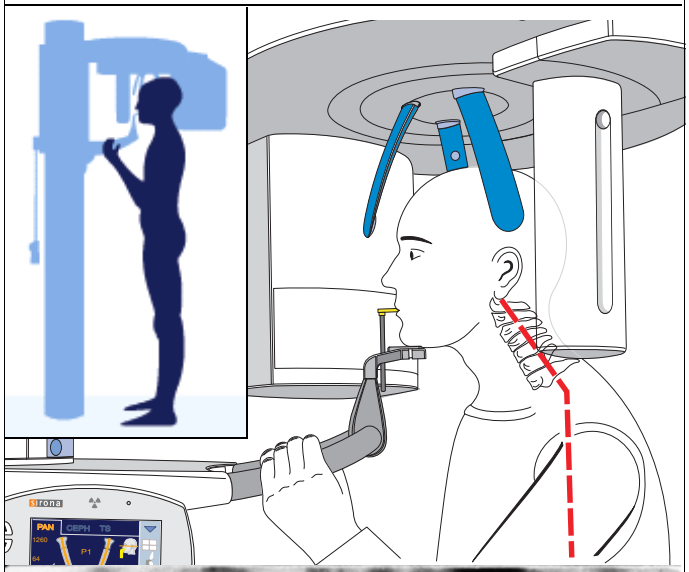
NOTE

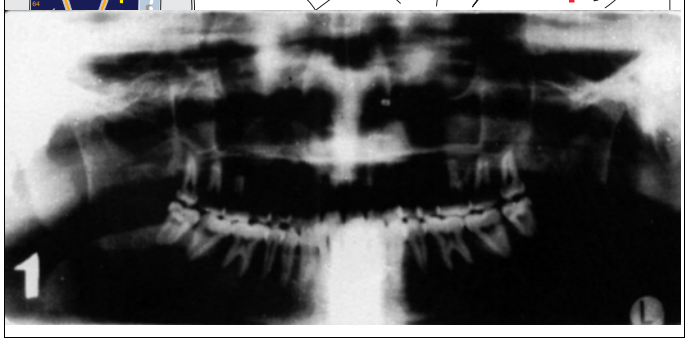
The height adjustment motor starts slowly and then increases its speed.
Press and hold down the height adjustment key until the unit has reached the desired height.



- The patient places the chin on the chin rest and seizes the handles.
- Swivel in the bite block.
- Have the patient bite into the indentation of the bite block (upper anterior teeth into the indentation, lower anterior teeth pushed forward as far as possible).







ATTENTION

*Make sure that the patient's spine is **slightly inclined** as illustrated.*
This can be achieved by having the patient take a small step towards the column.

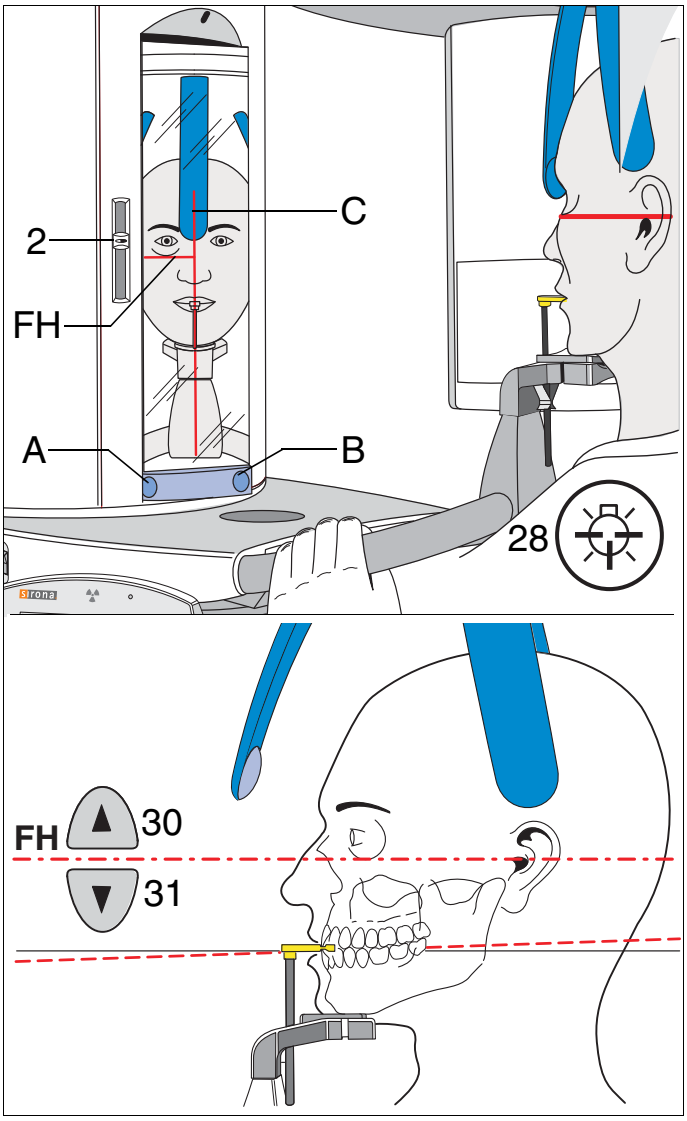
Thus the cervical vertebrae of the patient are stretched.

Stretched cervical vertebrae prevent diminished density in the anterior tooth region.

In special cases, you may also position a seated patient (using e.g. a dentist stool).

RIGHT

WRONG



- Swivel out the mirror by pressing the left recess **A** on the touch bar.
- Position the head of the patient in such a way that the **occlusal plane is slightly inclined towards anterior**.
- Switch on the **light localizer** with key (28) on the Easypad. It is used for correct patient positioning.
- As long as the light localizer is on, a red light localizer symbol is displayed on the touchscreen.

NOTE

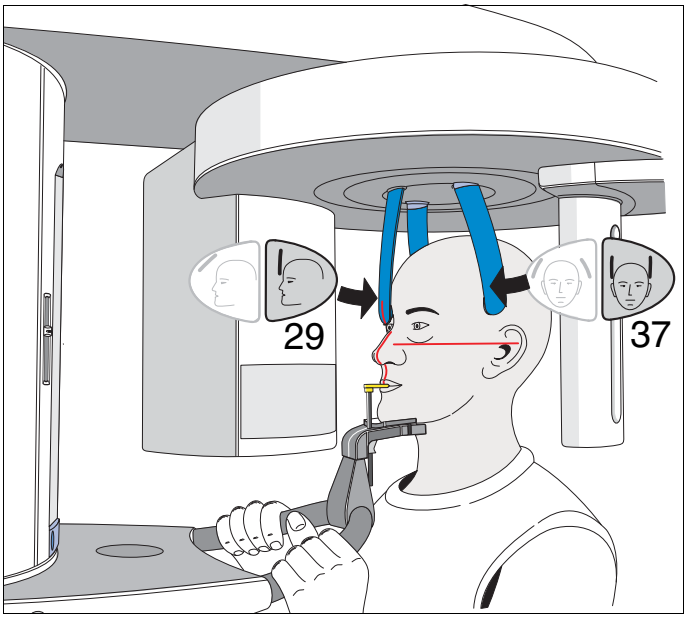
Make sure that the light beam does not hit the patient's eyes (laser light).
The light localizer switches off automatically after approx. 100 seconds.

The FH horizontal light beam

should reflect between the upper edge of the external auditory canal and the lowest point of the infraorbital rim (**F**rankfort **H**orizontal plane **FH**).

The height of the FH horizontal light beam can be adjusted with slider (2).

- Fine-tune the head inclination for the FH setting: **Briefly touch** the *"up"* (30) or *"down"* (31) arrow key for height adjustment.
- Align the center of the anterior teeth or of the face with the **central light line** (C).
- Press key (29) on the Easypad to move the forehead support *"towards forehead"*. On touching the patient's forehead, the forehead support stops automatically.
- Close the temple supports by pressing key (37) on the Easypad. On touching the patient's temples, the temple supports stop automatically.



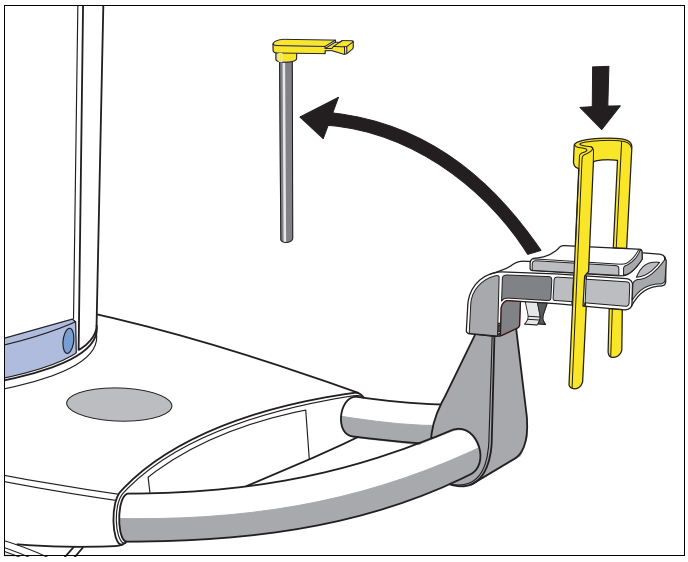
- Swivel the mirror back in by pressing the right recess **B** on the touch bar.
- Check the FH setting and the central light line.
- **Have the patient place his or her tongue against the palate.**

Displayed reference values

The Easypad shows the reference values of the height and forehead support settings, which are saved for further exposures in the additional information area of the SIDEXIS software.

NOTE

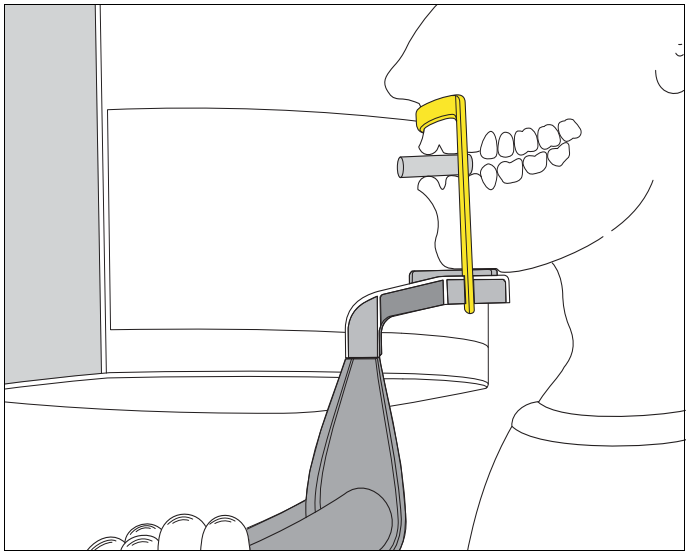
The forehead support and the temple supports open automatically when the exposure is complete.



Exposure with chin rest and bar

For patients without anterior teeth

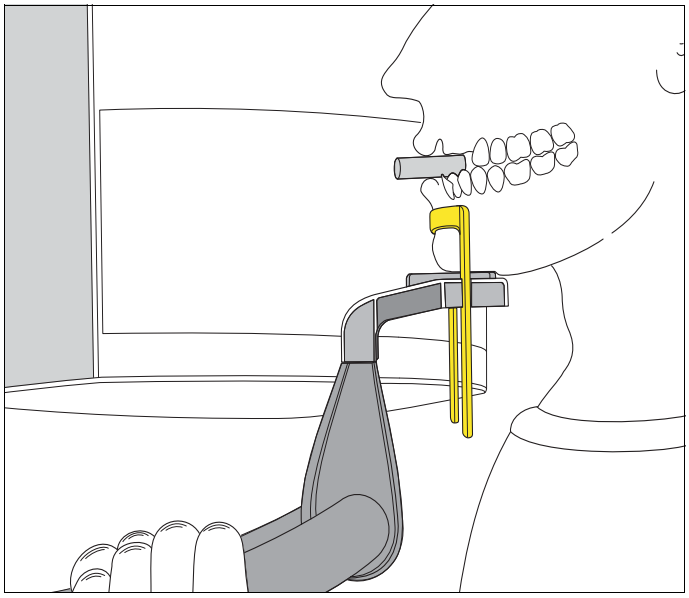
- Remove the bite block with the bite block rod; instead, fit the bar as illustrated (arch facing toward the column).



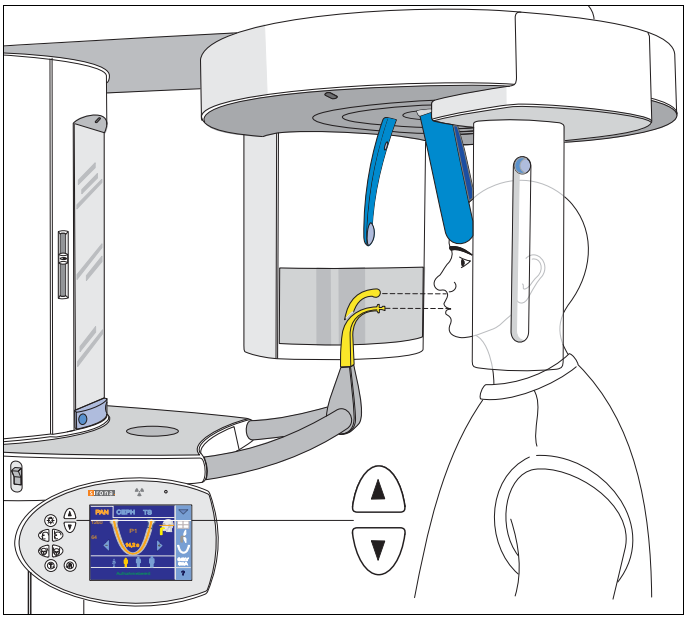
- **Make sure that the upper and lower jaw are in line.**
  This is easier if you place a cotton pellet between them.
- Proceed as for an exposure with chin rest and bite block.

Difference:
The patient places his or her chin on the chin rest.

- For optimal positioning of the head with relation to the slice position, the patient's subnasale must be placed against the bar.

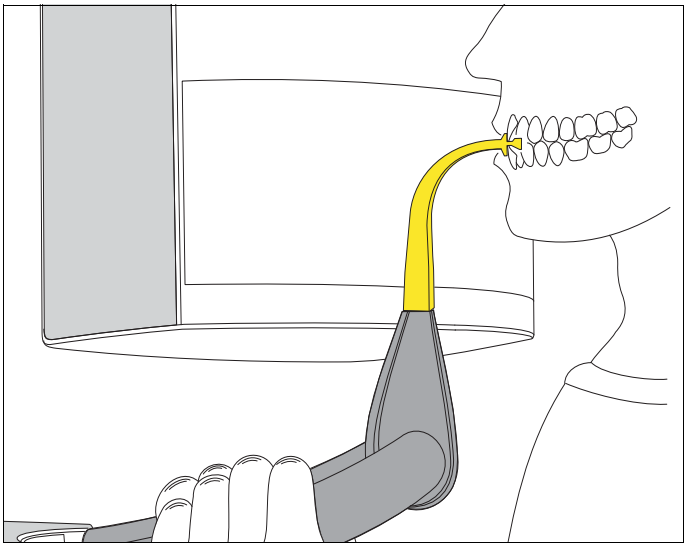


- If there are any anterior teeth left in the lower jaw, place the bar between chin and lower lip.
- **Have the patient place his or her tongue against the palate.**



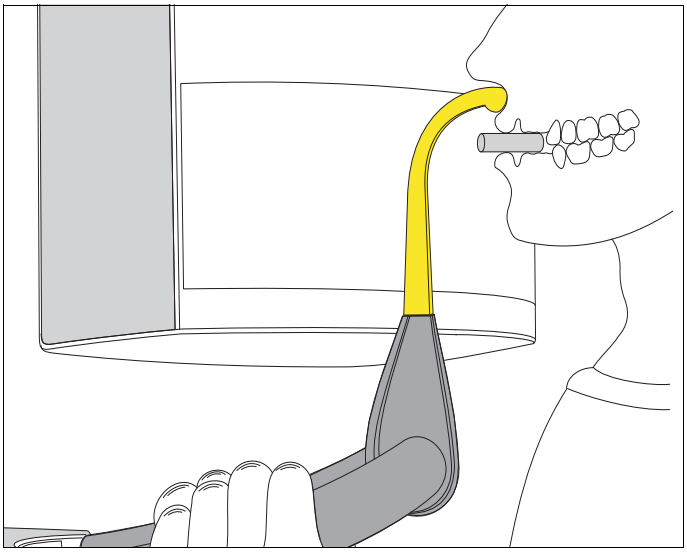
Exposure with bite block or contact segment without chin rest

- The patient places himself or herself in front of the control mirror.



... with bite block

- Using the “**up**” or “**down**” arrow key on the Easypad, adjust the height of the unit so that **the bite block and the anterior teeth are at the same height**.
- The patient seizes the handles.
- Have the patient bite into the indentation of the bite block.
  Upper anterior teeth into the indentation, lower anterior teeth pushed forward as far as possible.



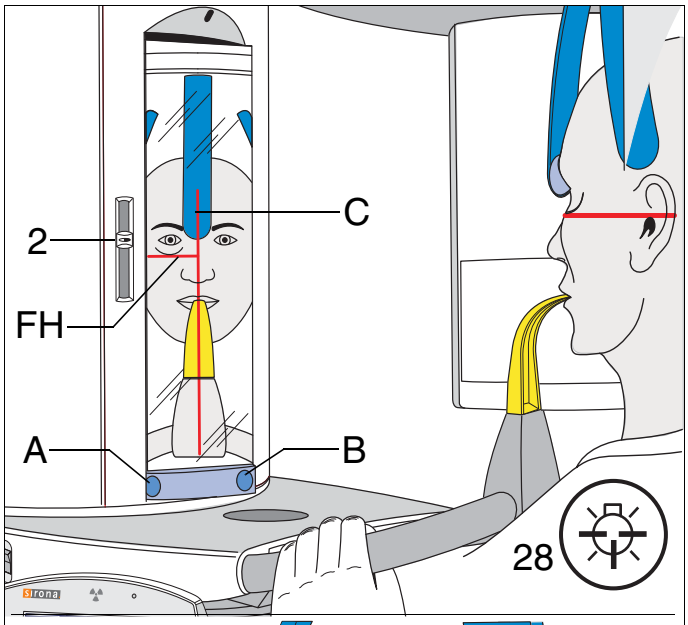
. . . with contact segment

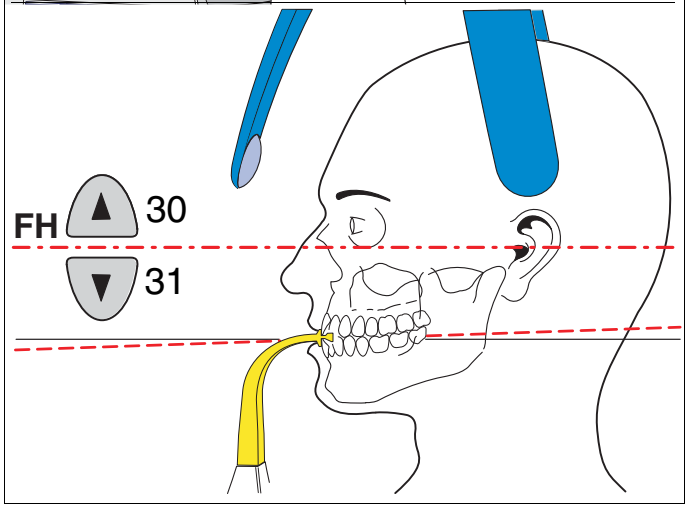
For patients without anterior teeth

- Adjust the height of the unit so that **the contact segment and the subnasale are at the same height**.
- The patient places the subnasale against the contact segment.
  Make sure that the upper and lower jaw are in line.
  This is easier if you place a cotton pellet between them.

NOTE

*Make sure that the patient’s **spine is slightly inclined** as described before,*
(see page 55).





- Swivel out the mirror by pressing the left recess **A** on the touch bar.
- Position the head of the patient in such a way that the **occlusal plane is slightly inclined towards anterior**.
- Switch on the **light localizer** with key (28) on the Easypad. It is used for correct patient positioning.
- As long as the light localizer is on, a red light localizer symbol is displayed on the touchscreen.

NOTE

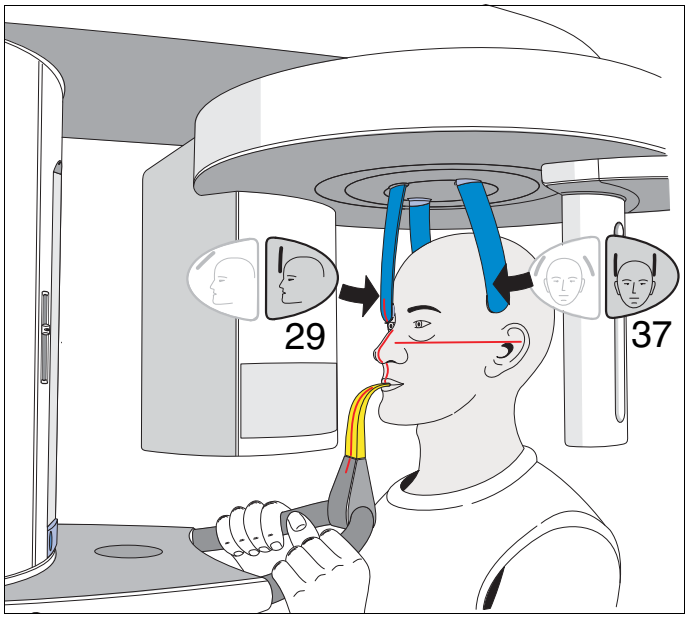
Make sure that the light beam does not hit the patient's eyes (laser light).
The light localizer switches off automatically after approx. 100 seconds.

The FH horizontal light beam

should reflect between the upper edge of the external auditory canal and the lowest point of the infraorbital rim (**F**rankfort **H**orizontal plane **FH**).

The height of the FH horizontal light beam can be adjusted with slider (2).

- Fine-tune the head inclination for the FH setting: **Briefly touch** the *"up"* (30) or *"down"* (31) arrow key on the Easypad for height adjustment.
- Align the center of the anterior teeth or of the face with the **central light line** (C).
- Press key (29) on the Easypad to move the forehead support *"towards forehead"*. On touching the patient's forehead, the forehead support stops automatically.
- Close the temple supports by pressing key (37) on the Easypad. On touching the patient's temples, the temple supports stop automatically.



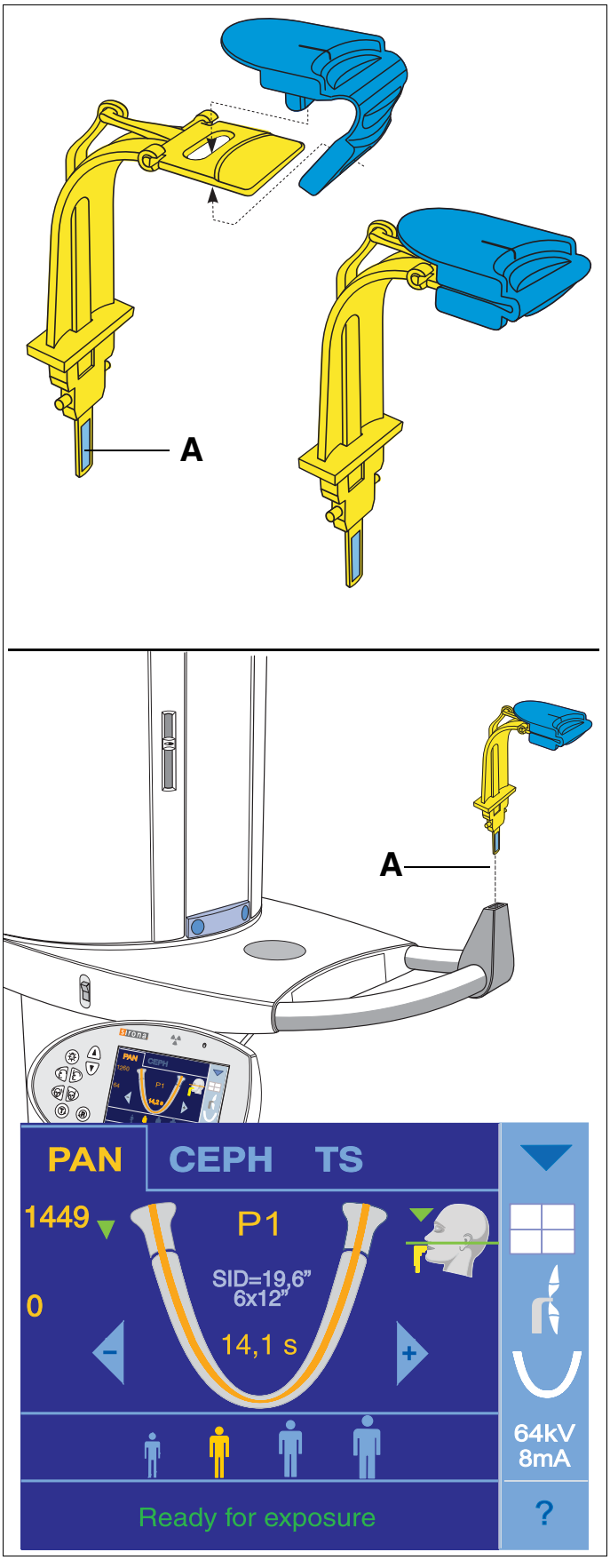
- Swivel the mirror back in by pressing the right recess **B** on the touch bar.
- Check the FH setting and the central light line.
- **Have the patient place his or her tongue against the palate.**

Displayed reference values

The Easypad shows the reference values of the height and forehead support settings, which are saved for further exposures in the additional information area of the SIDEXIS software.

NOTE

The forehead support and the temple supports open automatically when the exposure is complete.



Exposure occlusal bite block

Intended use:

The occlusal bite block is used for panoramic slice views. To make patient positioning easier and safer, you can use the occlusal bite blockfor exposure programs P1, P1 A, P1 C, half-view and full quadrant images, P2, P10 and P12. The unit here supports the user by displaying corresponding symbols on the Easypad and automatically stopping and emitting a double-signal when the angle of the occlusal bite block plate has reached its nominal position.

Preparations:

A replaceable bite block foam (single use device) is used for the bite impression. This soft bite block foam can also be used for patients who have no front teeth.

Insert the pins of the upper part in the opening of the bite block plate, fold the bite block foam down and snap the lower part onto the pins of the upper part.

Bite block foam (single use device), 100 pcs.
Order No. 61 41 449

Inserting the occlusal bite block

- Insert the occlusal bite block in the bite block holder as shown. The display on the touchscreen now differs from the usual image.

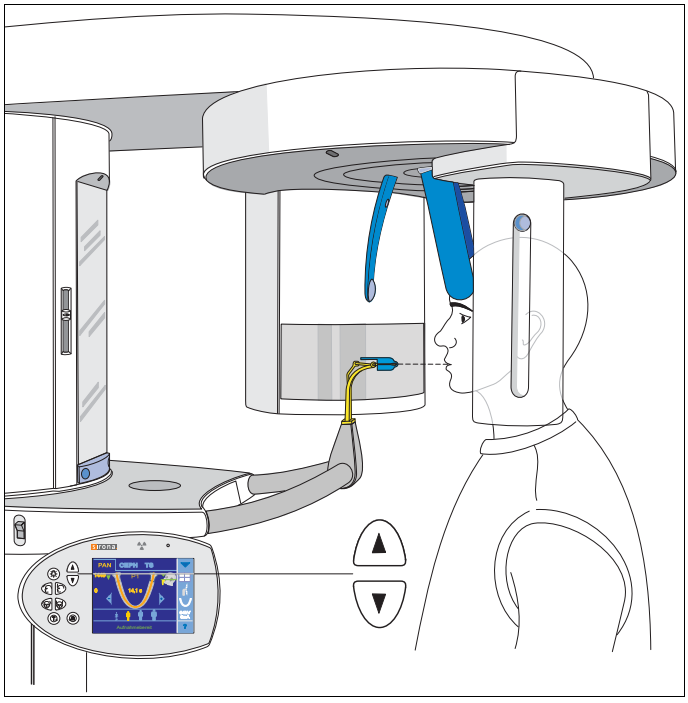
ATTENTION

*The occlusal bite block must be **correctly locked** in place. The symbol display will change as soon as the metallic blade **(A)** dips into the coil body.*
*Check every day whether the arrows **and** the head symbol are displayed consistently. If that is not the case, a system error is present.*
With the occlusal bite block in place, check whether the green bar is displayed in the head symbol; otherwise a system error is present.

- The current head posture is displayed on the right side of the Easypad touchscreen.
  Two green arrows are also displayed.
  The left arrow next to the height value indicates which height adjustment key must be pressed to correct the head posture.
  The right arrow next to the head display shows the approach to the nominal position.
- If the occlusal bite block is still inserted in the bite block holder after an exposure has been taken and you select any program other than the ones mentioned above, the help message **"Change bite block"** will appear in the comment line.
  Then insert the bite block or contact segment required for this exposure.
  The usual display then reappears on the touchscreen.
  The remaining preparation then must be performed as previously described for the other bite blocks.

ATTENTION

*When inserting, removing and storing the occlusal bite block, always make sure that its blade **(A)** is not broken off or bent.*



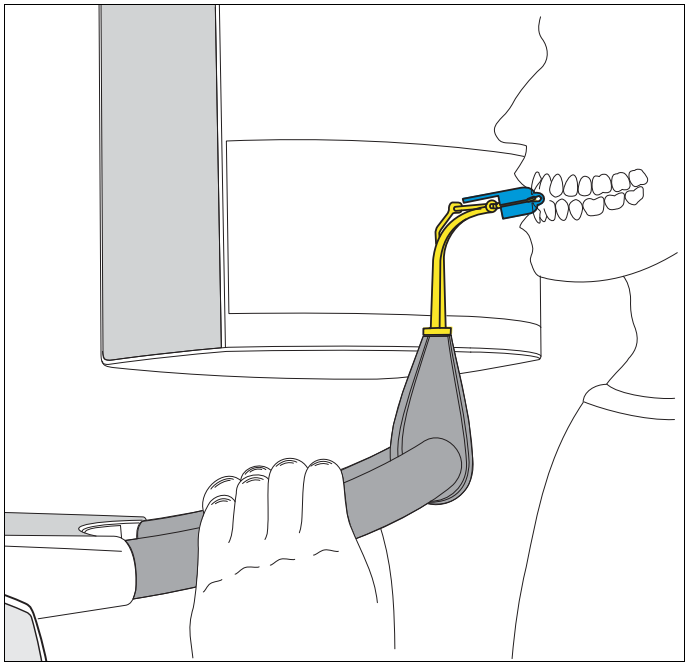
Positioning the patient's head for the occlusal bite block

- The patient places himself or herself in front of the control mirror.
- Use the **"up"** or. **"down"** keys on the Easypad to adjust the height of the unit so that the occlusal bite block and the patient's anterior teeth are at the same height.

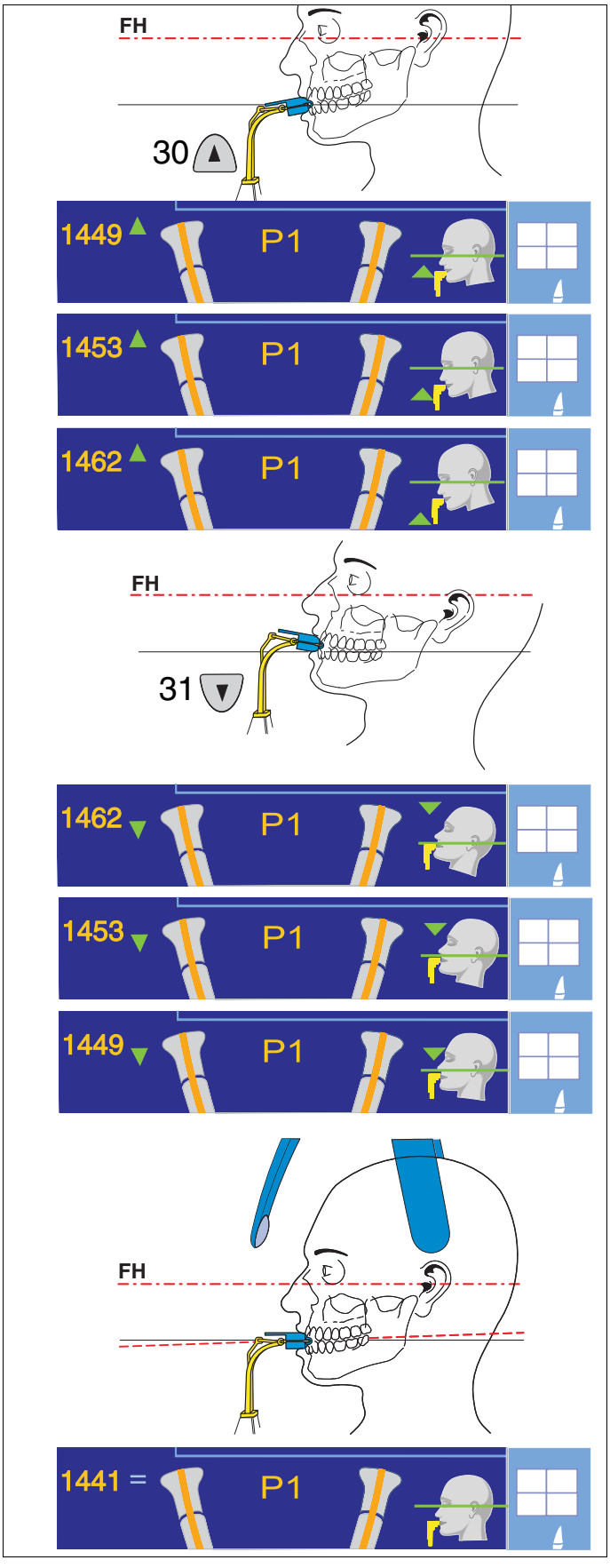
The motor movement is accompanied by an acoustic signal.

NOTE

The height adjustment motor starts slowly and then increases its speed.
Press and hold down the height adjustment key until the unit has reached the desired height.



- The patient seizes the handles.
- Have the patient bite into the grooves of the replaceable bit foam block with his teeth.



- If the green arrows on the touchscreen are pointing upward, the head posture must be corrected with the **"up"** key (30) on the Easypad.
- If the green arrows on the touchscreen are pointing upward, the head posture must be corrected with the **"down"** key (31) on the Easypad.
- Instruct the patient to let his head rest completely.
- The inclination of the patient's head is moved to the nominal position by pressing the appropriate **"up"** or **"down"** key.
- While the angle of the bite block is being adjusted, the high adjustment motor runs at an extremely slow speed.
- During this slow upward or downward travel, the patient's head is gently pressed upward or downward by the bite block foam.
- The right green arrow shows the slow approach of the head posture to the nominal position while the head inclination display also changes accordingly.
- Travel stops immediately when the nominal position has been reached, a **double beep** sounds, and the green arrows previously displayed disappear.
- An
  "=" sign appears next to the displayed height value in place of the left arrow.

  The head posture is now adjusted.

NOTE

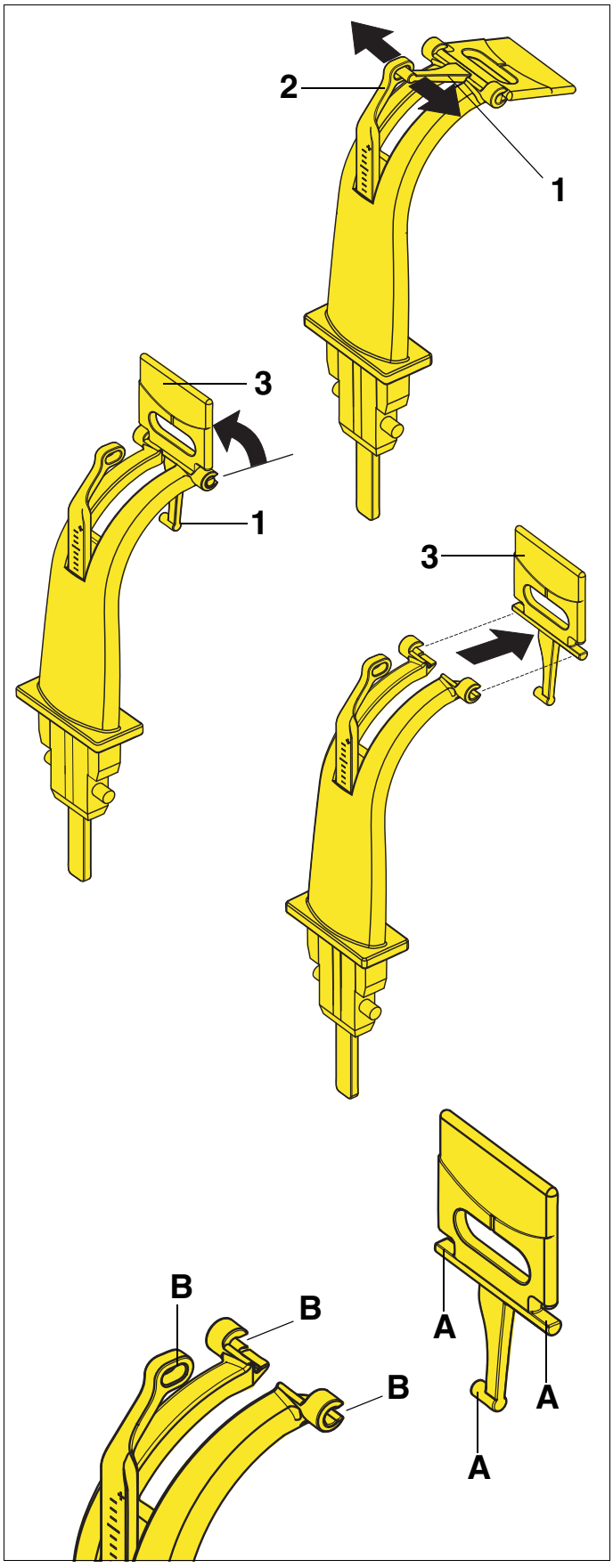
*Service engineers can change the angle of the bite block plate, and consequently, the **target position** of the head, as necessary or upon request.*

ATTENTION

If no change in the bite block plate angle is detected for a period of approx. 3 seconds, the speed of the height adjustment motor starts to increase.

Readjustment can be started by briefly touching the "up" (30) or "down" (31) height adjustment key.
The light localizers can be activated as additional positioning aids.

- Press key (29) on the Easypad to move the forehead support "towards forehead." On touching the patient's forehead, the forehead support stops automatically.
- Close the temple supports by pressing key (37) on the Easypad. On touching the patient's temples, the temple supports stop automatically.



Cleaning the occlusal bite block

If the hinges of the occlusal bite block begin to emit squeaking noises in operation following longer periods of use, they must be cleaned.

To do this, proceed as follows:

1. Pull the occlusal bite block out of its holder on the ORTHOPHOS XG^{Plus}.

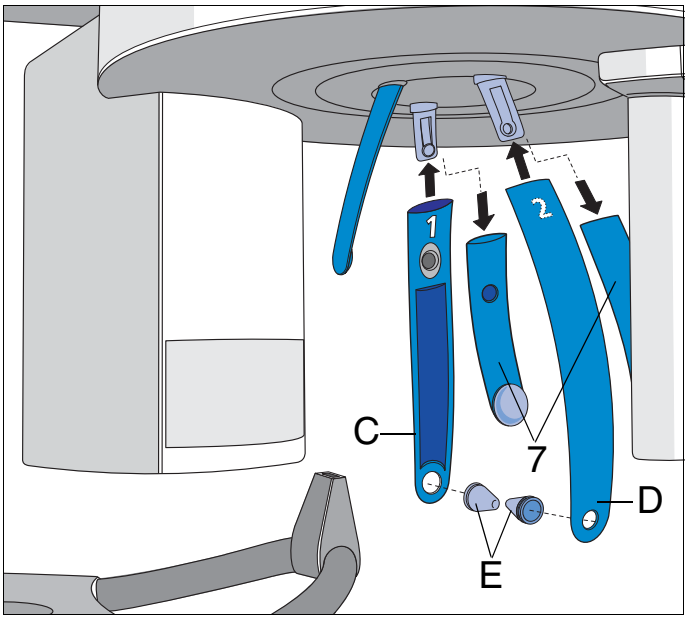
2. Carefully push apart the guide mandrel of the lever (1) on the bite block plate and the eyelet of the connecting rod (2) slightly in the directions of the arrows and unhinge the lever.

3. Swing the bite block (3) upward into a vertical position so that the lever (1) is pointing downward.

4. Pull the bite block plate (3) forward out of its hinge.

5. Clean the hinge axles (A) and the guide lugs (B) with disinfectant.

6. Assemble the occlusal bite block by following the same procedure in reverse order. When assembling, check the position of the bite block plate; the segment must point toward the connecting lever. Insert the occlusal bite block into its holder on the ORTHOPHOS XG^{Plus}.

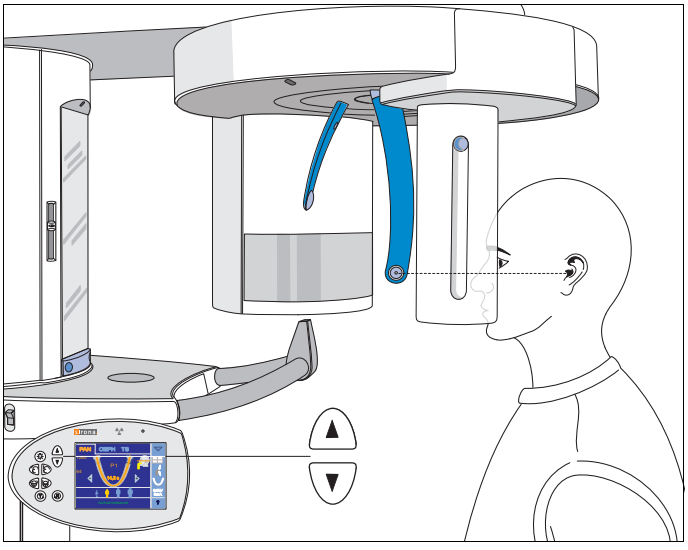


Temporomandibular joint views, programs TM3 – TM6 with temporomandibular joint supports

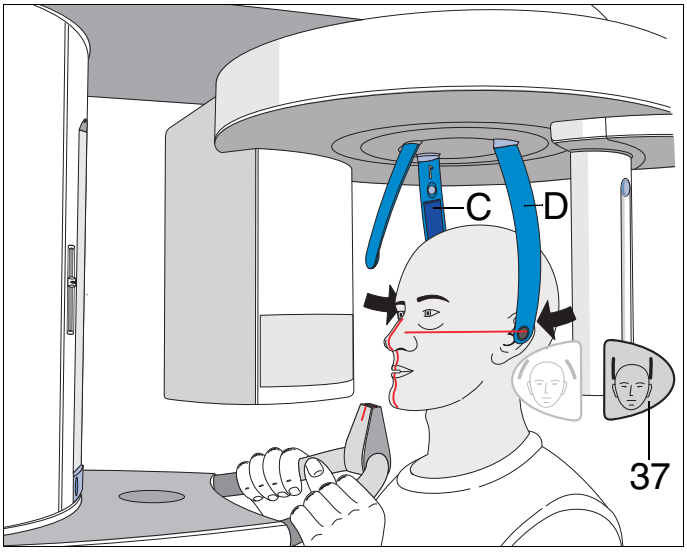
- For temporomandibular joint views, you must fit the temporomandibular joint supports (C) **"1"** on the right and (D) **"2"** on the left side in place of the temple supports (7).
  To do so, remove the two temple supports (7) after pressing the corresponding locking button; instead, push in the two temporomandibular joint supports (C) and (D) until they engage.
  Two sterile ear holders (E) must be plugged into the temporomandibular joint supports (C) and (D).
- Remove the bite block or chin rest.

NOTE

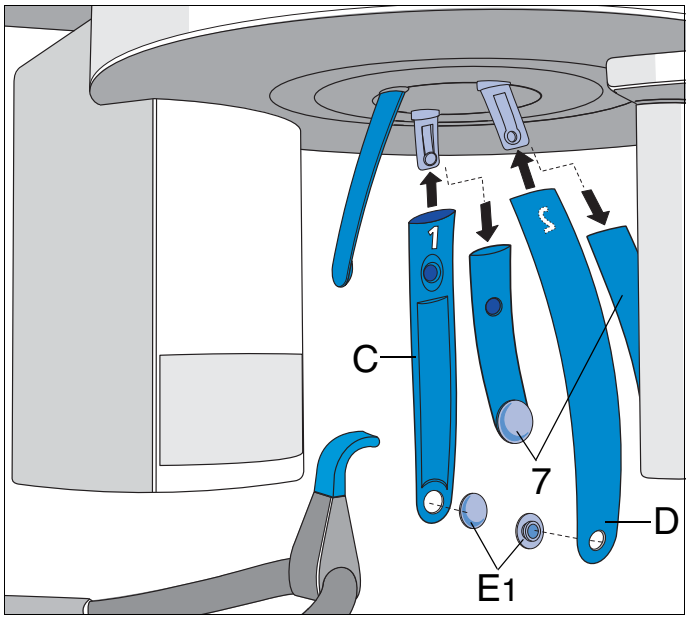
For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.



- Using the "**up**" or "**down**" arrow keys on the Easypad, adjust the height of the unit so that the ear holders are at the height of the external auditory canals.



- Position the patient's head between the temporomandibular joint supports (C) and (D).
  Close the temporomandibular joint supports with key (37) on the Easypad so that the ear holders fit into the external auditory canals.
- For programs **TM1**, **TM3** and **TM5**, the patient's head must be positioned in the **F**rankfort **H**orizontal plane **FH**.
- For programs **TM2**, **TM4** and **TM6**, the patient's head must be **inclined towards anterior** in relation to the FH so as to largely prevent overlaps.
- Align the center of the anterior teeth or of the face with the **central light line**.



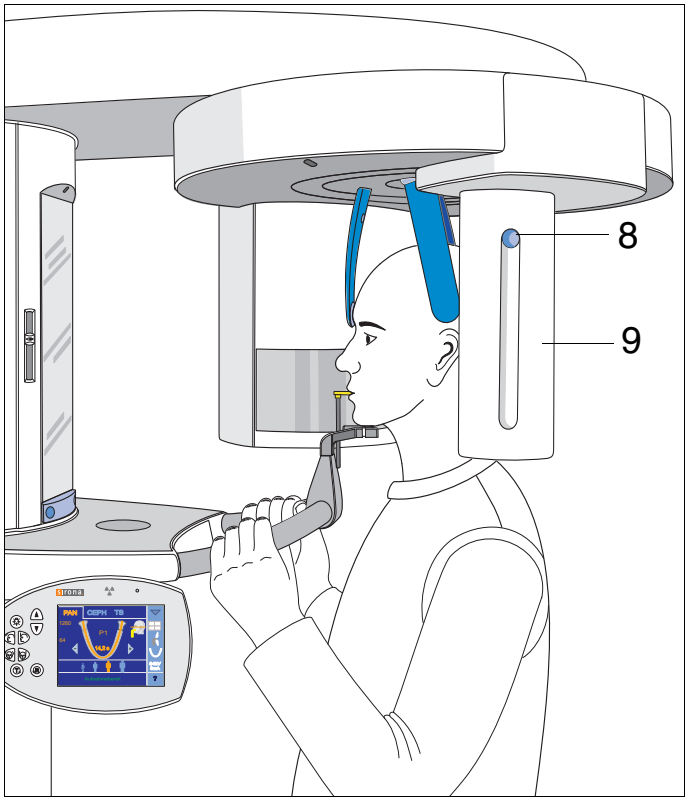
Sinus views, programs S1 – S4 with temporomandibular joint supports

- For sinus views, you must fit the temporomandibular joint supports (C) **"1"** on the right and (D) **"2"** on the left side in place of the temple supports (7).
  To do so, remove the two temple supports (7) after pressing the corresponding locking button; instead, push in the two temporomandibular joint supports (C) and (D) until they engage.
  Two sterile ear holders (E1) must be plugged into the temporomandibular joint supports (C) and (D).

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.

9.4 Finishing the preparations (panoramic views)

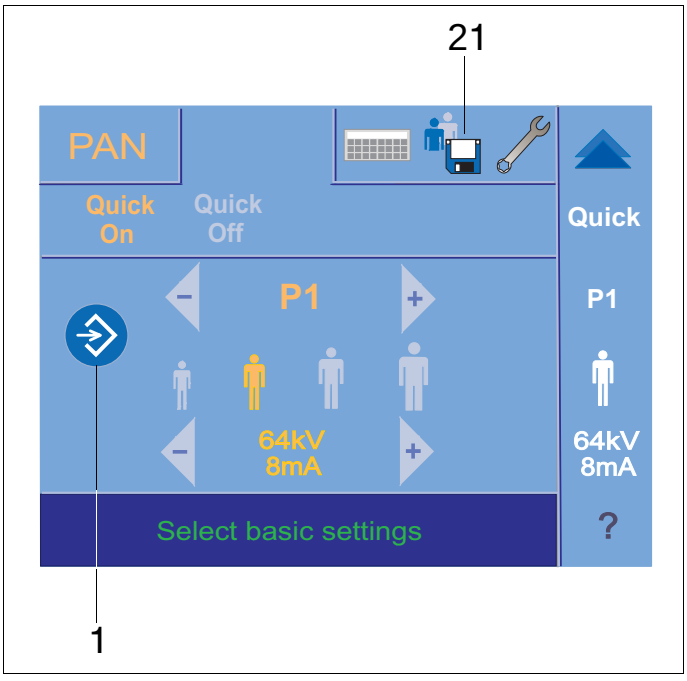


- If the light localizer is still on, switch it off with key (28) on the Easypad. The light localizer symbol on the touchscreen disappears.
- The sensor (9) must be inserted up to the stop. This is the case when the pushbutton (8) is flush with the surface.

If the sensor (9) is not fully inserted, the help message **"Plug sensor into PAN slot"** appears in the comment line.

If further help messages are displayed in the comment line, they must be observed and processed one after the other until the message "**Ready for exposure**" appears.

9.5 Making the basic settings in program level 3



"Quickshot" presetting

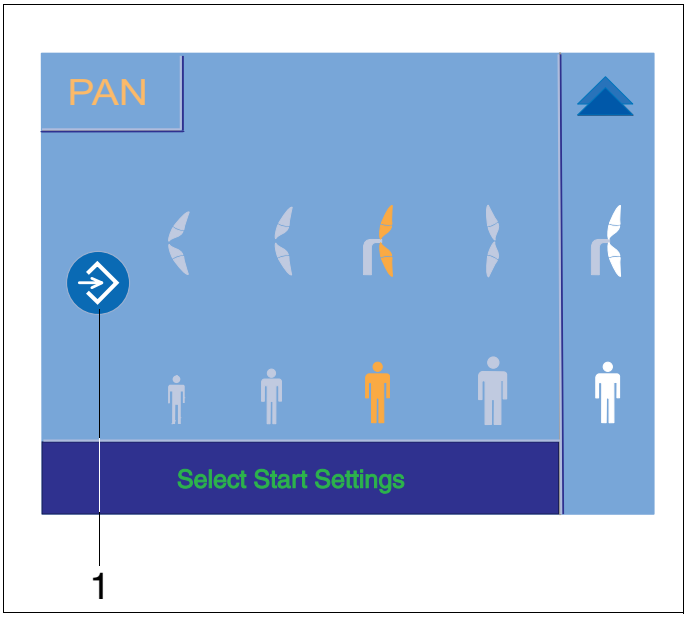
"Quickshot" = reduction of the cycle time by approx. 20 – 50%, depending on the exposure program for programs P1, P2 and P10.

Programming the patient symbols

You may enter new kV/mA values for the preselected exposure program and for the respective preselected patient symbol in the center area.

Programming is done by touching the memory symbol (1).

9.6 Changing the startup settings in program level 4

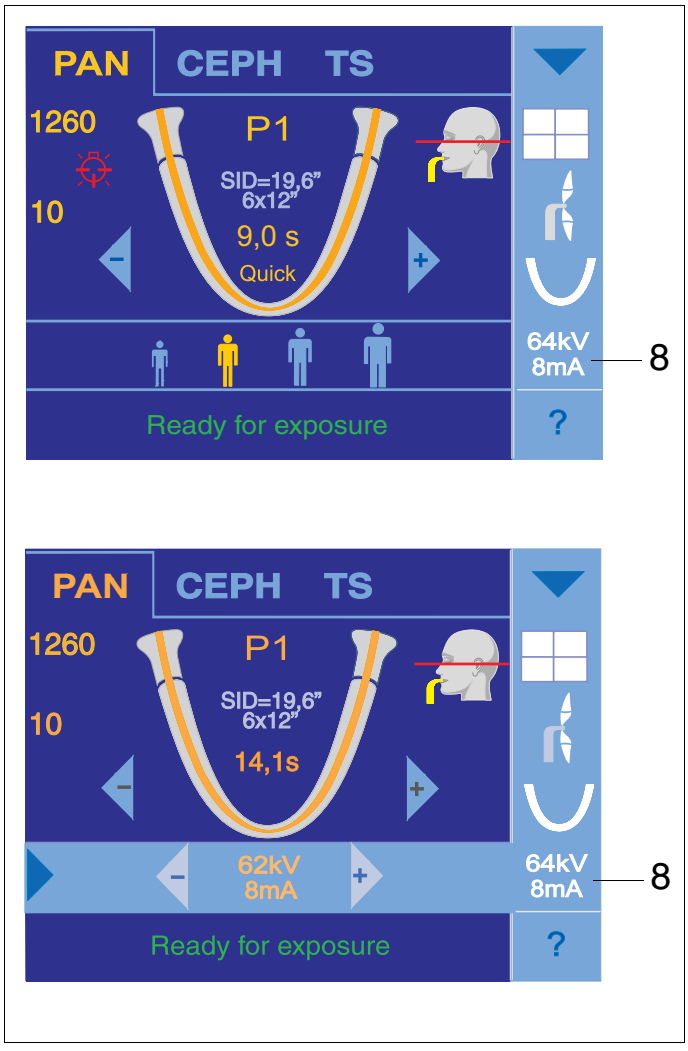


You can access program level 3 by touching the disk icon (21) in level 4.
In level 4 you can modify any factory-programmed startup parameters.
They are then displayed after switching on the system and for each new exposure.

You can change the abnormality preference (2nd icon from the right, as per factory setting) and the patient icon preference (2nd icon from the left, as per factory setting).

Programming is done by touching the memory symbol (1).

9.7 Selecting the exposure parameters



The patient symbol keys are factory-programmed with kV/mA combinations:

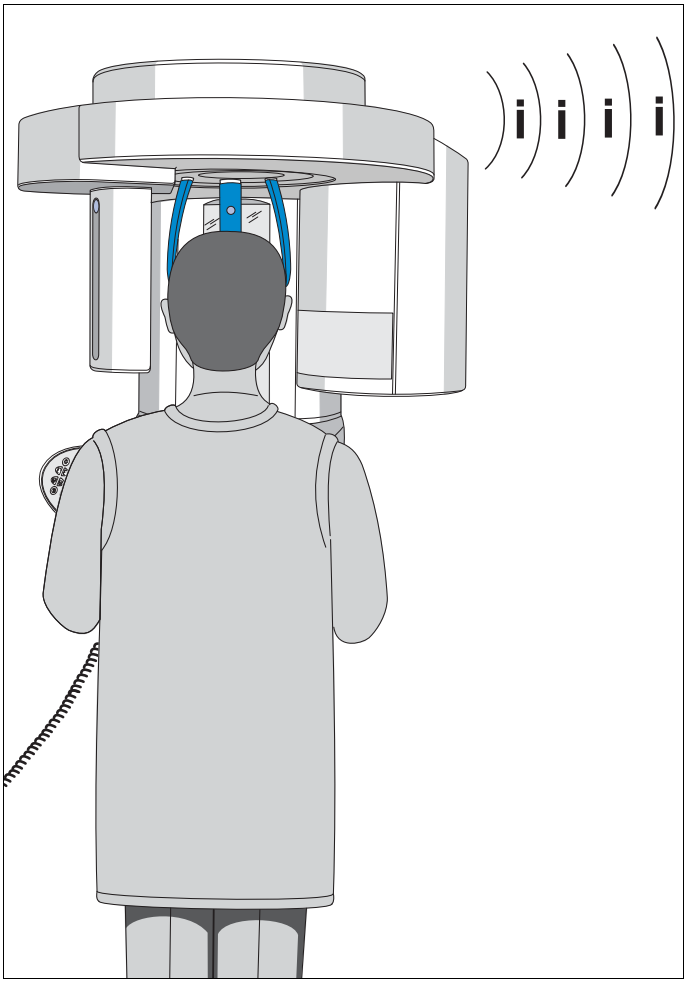
- Select the exposure parameters by touching one of the four patient symbols.
  The selected patient symbol is highlighted in orange and the corresponding kV/mA value is displayed in column (8) next to the patient symbols.

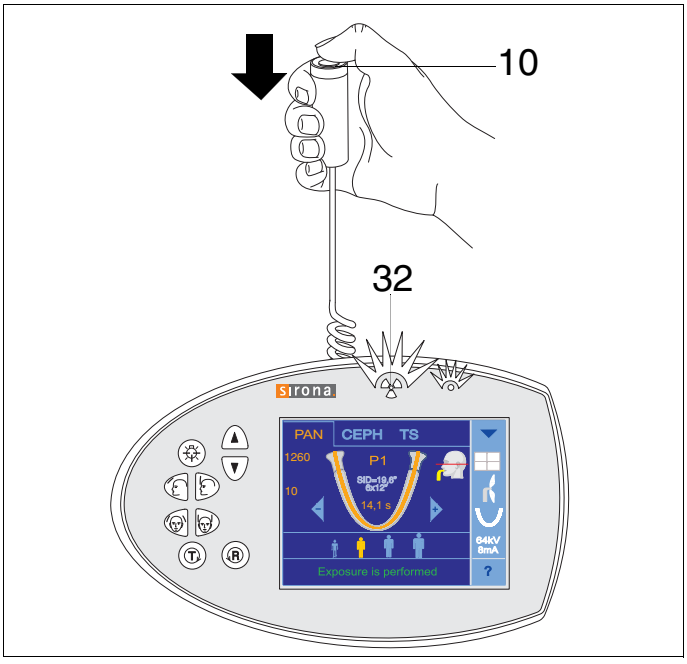
Modifying the exposure parameters manually

If the default kV/mA combinations do not provide satisfactory results, you can preselect intermediate kV/mA values in the **kV/mA** submenu.

To open the submenu, touch the kV/mA display in column (8). The values can be adjusted with the –/+ keys. To close the submenu, touch the light blue arrow at the left margin of the submenu line. (See also section **3.2 “General touchscreen functions”**).

9.8 Releasing the exposure





- **Observe the radiation protection regulations (see also chapter 1 "Identification of warning and safety information")**

NOTE

There must not be any help message displayed in the comment line of the touchscreen.
*The message "**Ready for exposure**" must appear.*

NOTE

*When you press the exposure release button on the remote control while the door is open, the message "**Close the door**" with help code **H321 is displayed.** Close the door and acknowledge the message.*

ATTENTION

Advise the patient not to move his/her head in any way during the exposure and check to make sure that this does not happen!

- To release the exposure, press the exposure release button (10).

The rotary movement of the selected exposure program is performed automatically.

While radiation is active, the optical radiation indicator (32) on the Easypad or on the remote control is illuminated.

In addition, an **acoustic signal** sounds throughout the entire radiation time.

ATTENTION

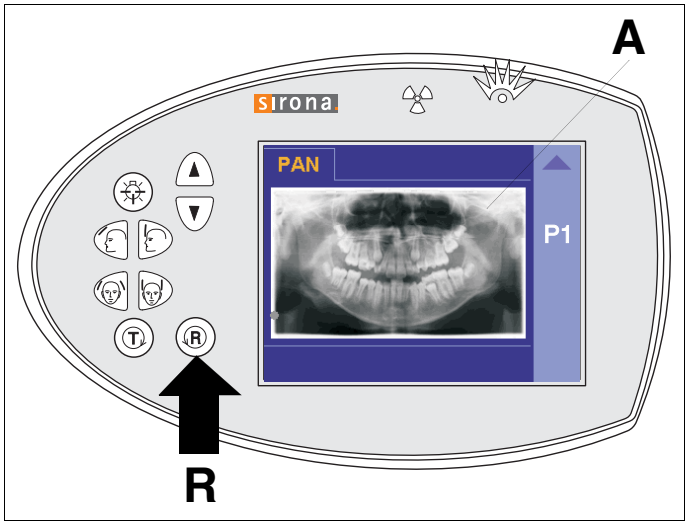
Take care not to let go of the exposure release button prematurely. Note that radiation may be released several times during an exposure cycle. Wait until the unit has completed the exposure cycle.

- The exposure cycle is complete when...
  ... the touchscreen comment line switches from "**Exposure is performed**" to "**Please wait**".
  ... a row of dots "**.....**" appears alternately with the program number on the remote control display.
  ...a short pulsed tone sequence also can be heard at the end of the exposure (this function can be deactivated by your service engineer).

NOTE

*The end of the exposure cycle can also be seen on the SIDEXIS monitor, namely when the **progress indicator shows 100 %** and the preview image starts to build up.*

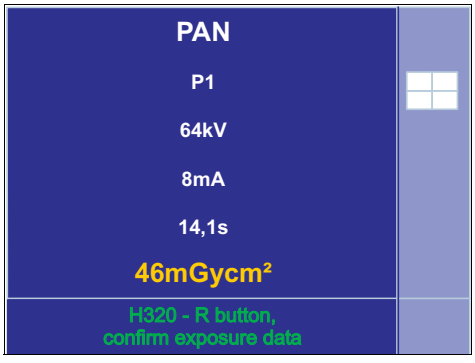
- After completing the first part (TM1.1 or TM2.1) of one of the two-part programs for temporomandibular joint exposures, TM1 and TM2, the program spontaneously switches to TM1.2 or TM2.2 on the remote control or on the touchscreen respectively. In this case you can let go of the exposure release button. In the meantime, the ring automatically returns to its starting position. TM1.2 or TM2.2 is released and completed as described above.
- The forehead support and the temple supports open automatically, and the patient may leave the unit.



After completion of the exposure

the X-ray image is displayed on the PC monitor in SIDEXIS.

In addition, a small control image (A) is displayed on the touchscreen; it is not suitable for diagnostic purposes. You **must** close the preview image again by touching the touchscreen.



Display of the dose area product

The exposure mode, exposure program, tube voltage, tube current, real radiation time, **dose area product** and shadowing (depending on the exposure program) are again displayed on the touchscreen.

- Acknowledge the exposure time actually needed by pressing the return key **R**.
- Then reset the rotating element to its starting position by pressing the return key **R** a second time.

Canceling an exposure

If you let go of the exposure release button prematurely, the exposure is canceled.
The exposure time and dose area product display readings flash following exposure cancellation. The exposure time which had elapsed prior to cancellation is displayed.

- Press the **"R"** key on the Easypad twice.

NOTE

Please note that any program settings which may have been changed must be preselected again before repeating the exposure.

- After the rotating element has returned to its starting position, repeat the exposure.

Automatic exposure blocking

(thermal protection of the tube)

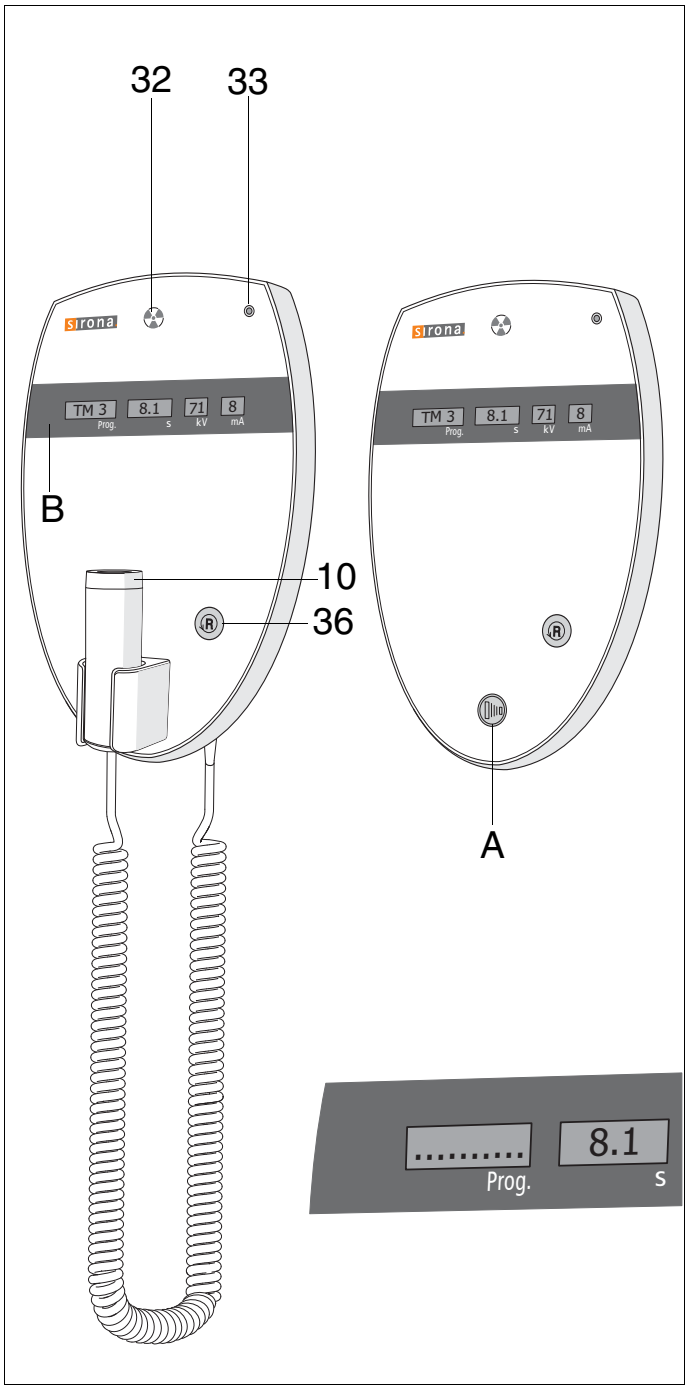
Premature release of a new exposure is prevented by the automatic exposure blocking function.

When you press the exposure release button, the message "**Ready for exposure in "XX" seconds**" appears in the comment line of the touchscreen.

The remaining cooling time is counted down and is displayed under "**XX**".

Only after the cooling period has elapsed is it possible to release a new exposure.

9.9 Remote control



If the ORTHOPHOS XG is located in an X-ray room which has a door and enables visual contact with the patient, you can use **remote control** to release the exposure.

For that purpose, the **exposure release button (10)** can be detached from the unit and attached to the remote control.
The **exposure release button (A)** can be used if a longer cable is not required to maintain visual contact with the patient.

The remote control has an **"R" key** (36) for acknowledging the exposure and resetting the unit to its starting position, an optical (32) and acoustic **radiation indicator** as well as a "**Unit ON**" LED (33).

After you switch on the system, the LED (33) lights up. The radiation indicator (32) lights up for approx. one second for a function test.
The four display fields on the display panel (B) light up and program P1 appears with the corresponding values after a short time.

As long as plain-text **help messages** are displayed on the Easypad touchscreen, they also appear in coded form on the **"Prog."** display field of the remote control, **alternating** with the **program name**.

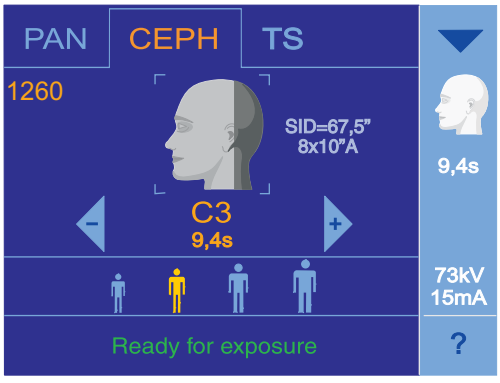
Once the unit has been prepared for the exposure and all **help messages** have been processed, the **program name "Prog."**, the **exposure time "s"** as well as the "**kV**" and "**mA**" values are constantly displayed on the **display panel (B).**
You may now release the exposure.

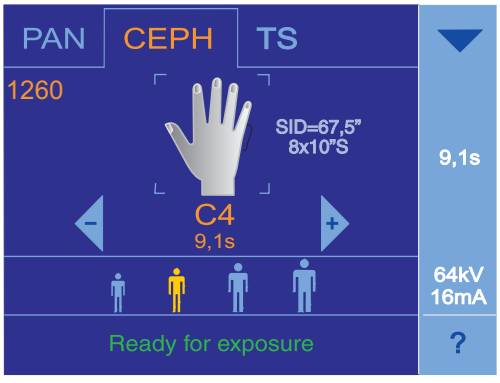
NOTE

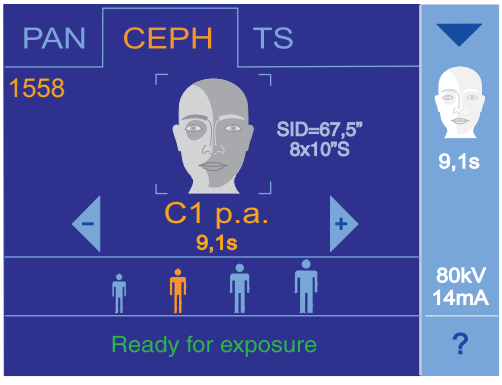
*If a row of dots **.....** appears in the **Prog.** field, this means that the system is currently in a preparatory phase (e.g. system movements, parameter changes, program loading times etc.). Just wait until the dots automatically disappear and the system signals that it is ready again.*

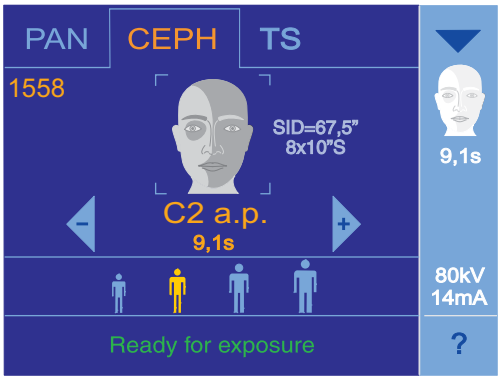
10 Cephalometric exposures (CEPH)

10.1 Preparing a cephalometric exposure (CEPH function)









Select the CEPH function

by pressing **"CEPH"** in the program group selection.
The menu for program C3 lateral views (asymmetric A) appears on the touchscreen.

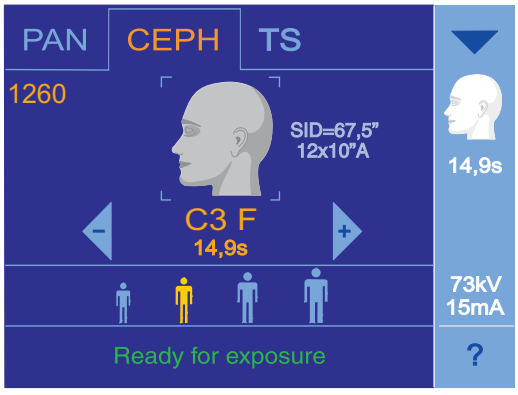
Using the +/– arrow keys, you can select program C1 p.a. (symmetric S), C2 a.p. (symmetric S) or C4 for carpus views.

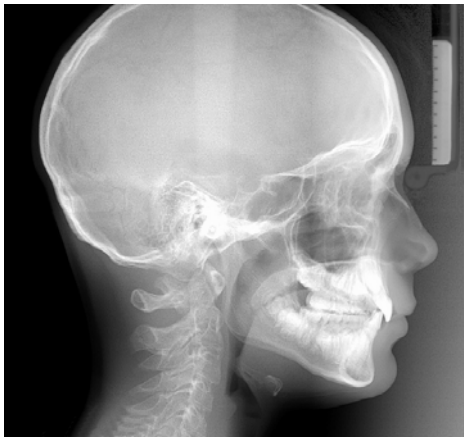
"R button, move into Ceph starting position" appears in the comment line.

ATTENTION

Make sure that no patient is in the movement range of the PAN rotating element or cephalometer.

Now press the **"R"** key on the Easypad.
The rotating element moves into the position for cephalometric radiography. The secondary diaphragm and the ceph sensor on the cephalometer move all the way to the rear for patient positioning.





Full format program C3 F (30x23)

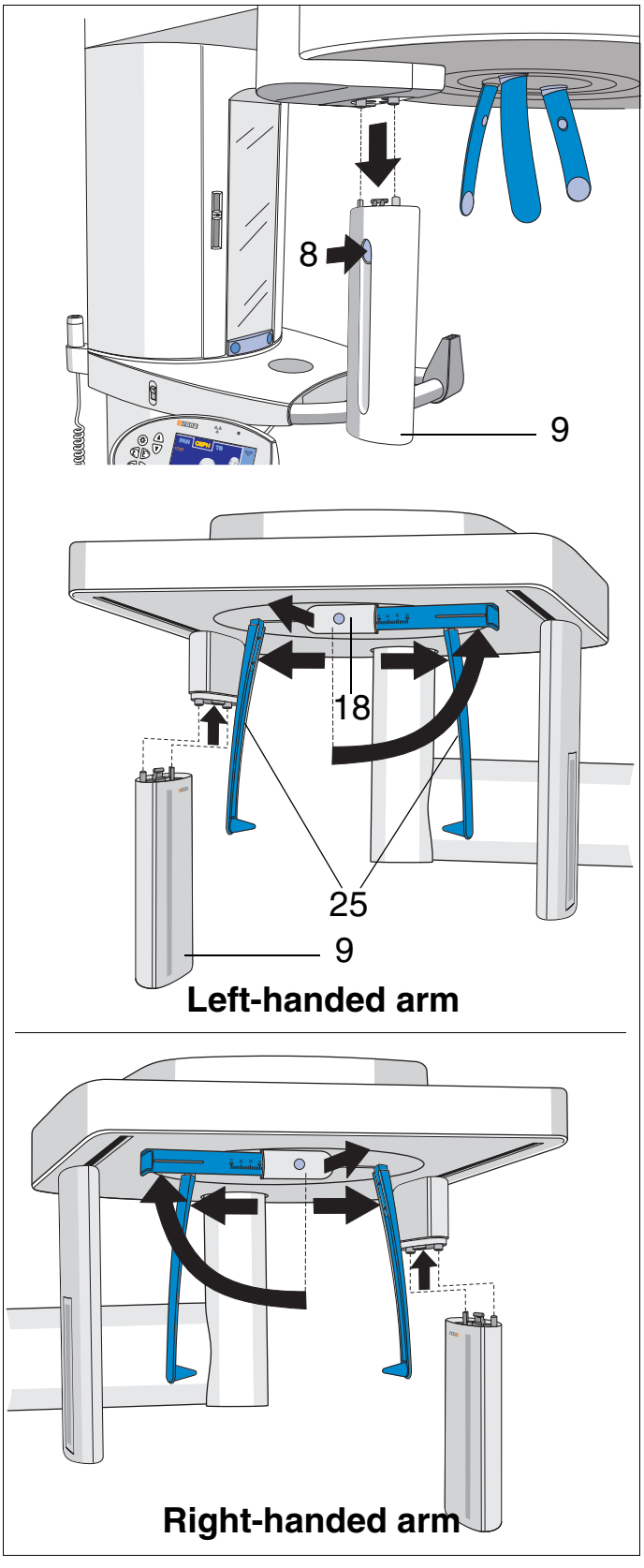
Program **C3 F** (30x23) allows for generating a full format lateral view.
This view shows the entire head of the patient (not cut off at the back).

If program **C3** has been preselected, you can activate subprogram **"C3 F"** by touching "**C3**" on the touch-screen.

NOTE

*By default, the patient's face points to the right in the display of lateral view **C3** or **C3 F**.*
At your request, this orientation can be permanently changed by your service engineer so that the patient's face points to the left on the X-ray.
Please also note that all other ceph exposures C1, C2 and C4 are will then also be displayed "mirrored", i.e. laterally reversed.

10.2 Preparations on the cephalometer



Inserting the sensor

If you operate the unit with one sensor only, you must remove the sensor (9) from its slot in the rotating element for pan exposures and plug it into the slot on the cephalometer.

NOTE

To remove the sensor, hold it firmly, press the pushbutton (8) fully in and hold it down. Remove the sensor from its holder by pulling it downward.

ATTENTION

DO NOT DROP THE SENSOR!
A shock sensor for detecting shocks or drops is built in.

ATTENTION

When removing the sensor from the pan/ceph slot or handling a sensor that has already been removed, make sure not to touch the sensor plug on the unit end, especially not while touching the patient at the same time.

Slide the sensor with its two guide bolts into the guide sleeves and push it up to the stop; it is not necessary to press the pushbutton (8) when doing this.

If the sensor (9) is not fully inserted into the slot on the cephalometer, the help message **"Plug sensor into Ceph slot"** appears in the comment line.

If a PAN sensor has been plugged into the Ceph slot unintentionally, the help message **"Plug in Ceph sensor"** is displayed.

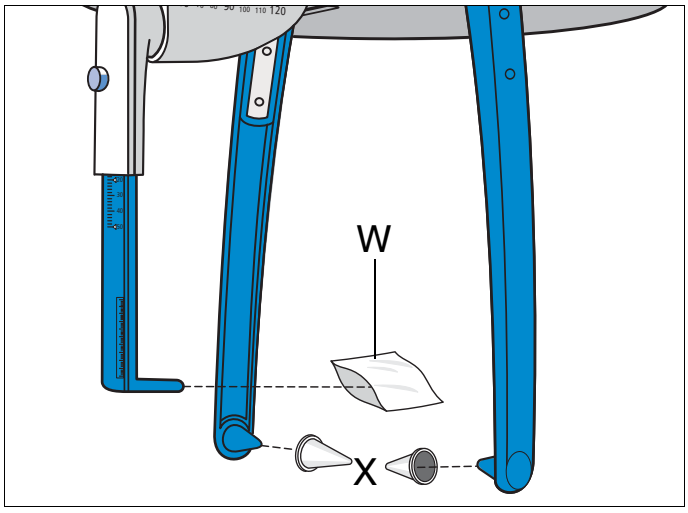
NOTE

If you operate the unit with two sensors, the PAN sensor may remain in its slot on the rotating element.

- Seize the nose support (18) at its upper front end, pull it toward the front as far as possible and fold it up toward the side.
- Seize the ear plug holders (25) at their upper ends and push them outward as far as possible.

NOTE

All of the following illustrations of the cephalometer are shown in the left-handed arm version. However, they also generally apply to the right-handed version of the cephalometer, see adjacent illustration.

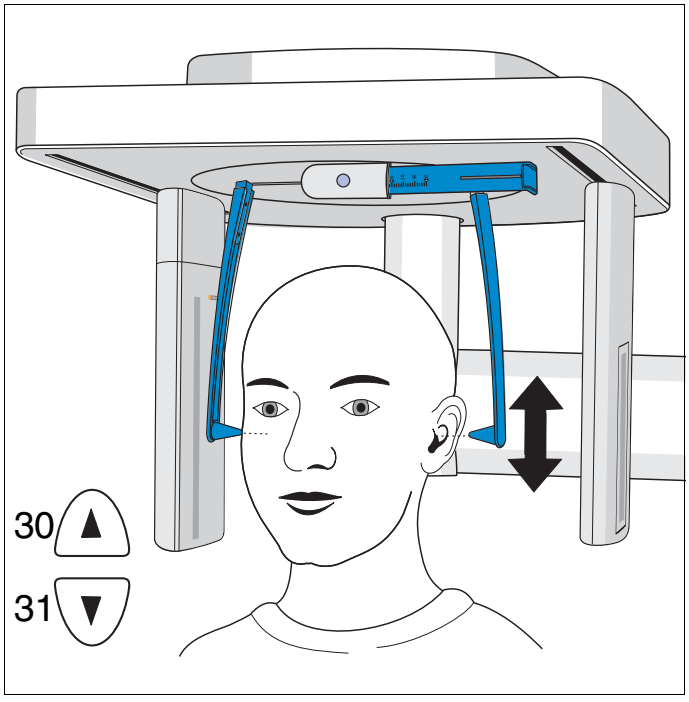


Fitting the hygienic protective covers

W For nose support,
single use device
(100 pieces) Order No. 33 14 106

X For ear plugs,
not a single use device (sterilizable)
(20 pieces) Order No. 89 32 261

10.3 Positioning a ceph patient



Preparations

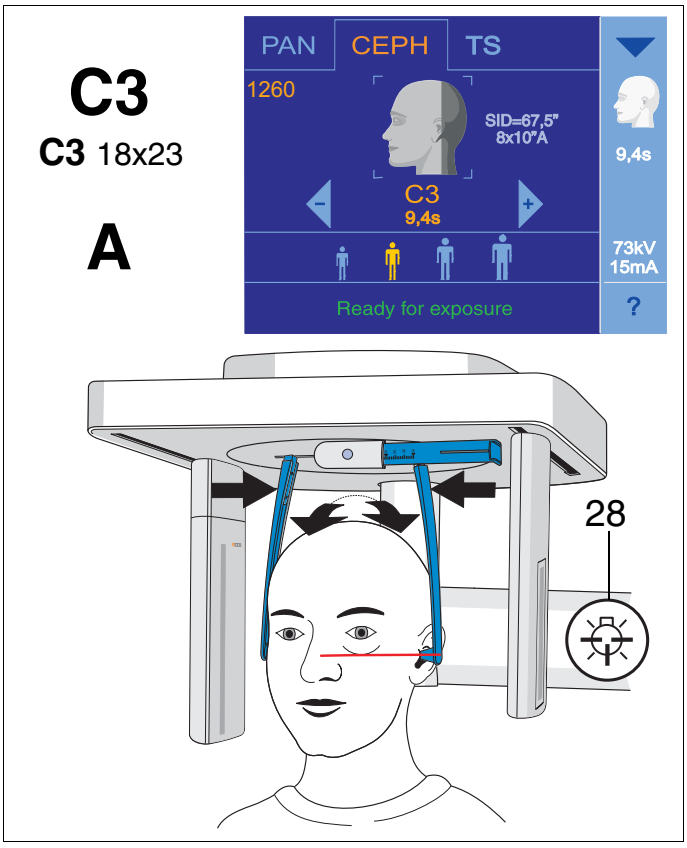
Ask the patient to **take off** all **metallic objects** such as glasses and jewelry in the head and neck area as well as all removable dental prostheses.

Adjusting the height of the unit

Move the cephalometer to approximately the height of the patient's head and have the patient step back into the head support.

Position patients with a body height between **approx. 93 cm** and **approx. 197 cm** standing between the ear plug holders, and **taller** or **shorter** patients **sitting** on a fixed, height-adjustable chair with a short backrest.

Use the "**up**" (30) or "**down**" (31) arrow key on the Easypad to adjust the height of the cephalometer so that the ear plugs are at the height of the external auditory canals.



C3 lateral view (A = asymmetric)

For **lateral views**, the patient must be standing with his/her **face toward the front**.
(This applies to both the left-handed and the right-handed ceph arm version).
Insert the ear plugs into the external auditory canals.
Hold the ear plug holders at their **upper ends** when doing this.

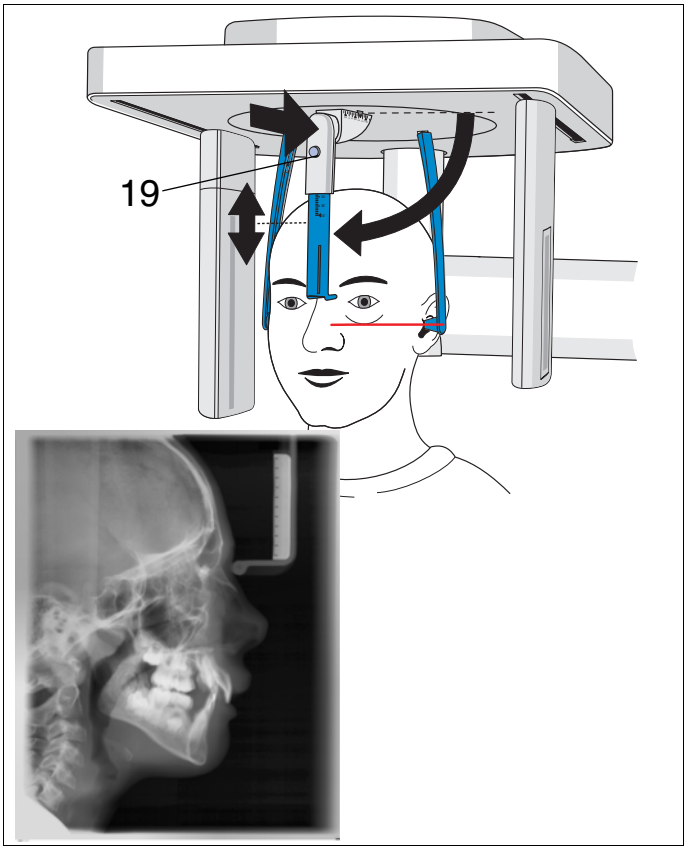
Switching the light localizer on

using the key (28) on the Easypad.
The secondary diaphragm with the light localizer for the reflection of the FH line moves far to the front.
When taking lateral views, the light localizer serves for positioning the head according to the **FH** (**F**rankfort **H**orizontal plane). It will switch off after approx. 100 seconds or automatically as soon as the exposure starts.
The light line roughly reflects in this area.
Have the patient tilt or raise his/her head until it is positioned correctly.
As long as the light localizer is on, a red light localizer symbol is displayed on the touchscreen.

NOTE

Make sure that the light beam does not hit the patient's eyes (laser light).
The light localizer switches off automatically after approx. 100 seconds.

If necessary, fine-tune the head inclination using keys (30) or (31) on the Easypad.



Adjusting the nose support

Move the nose support downwards.
Slightly press and hold down the locking knob (19) while adjusting the nose support in vertical direction to the height of the nasal root.
Release the locking knob (19).
Carefully push the nose support back to the nasal root.

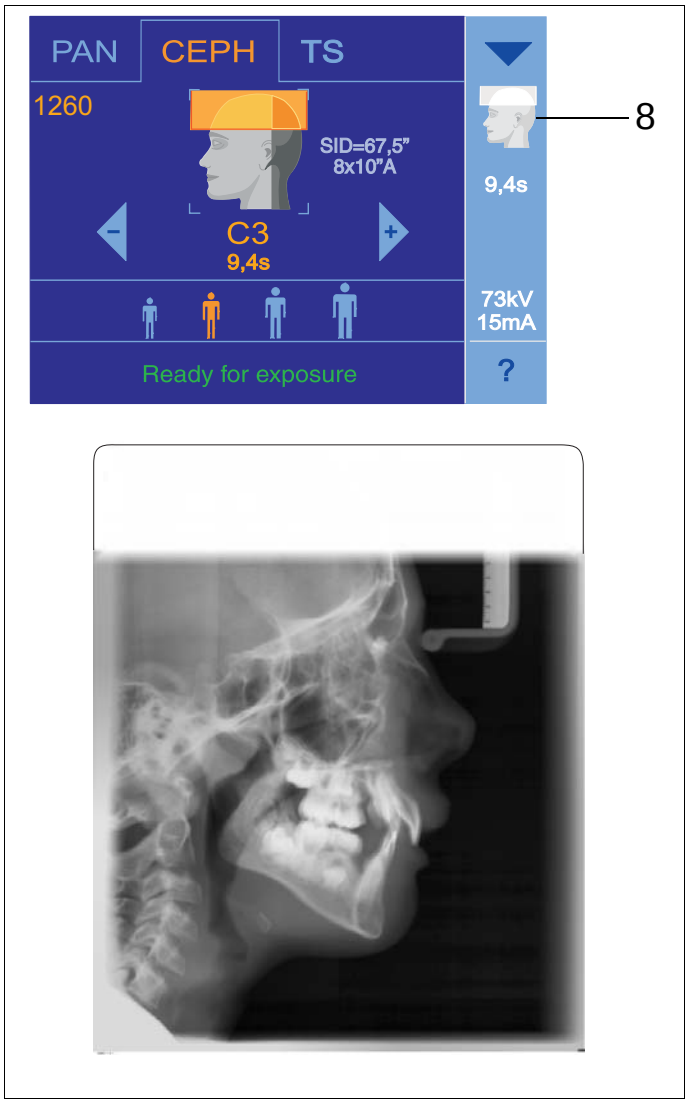
Select the kV/mA values by touching one of the four patient symbols on the touchscreen.
You can also choose if you want to use half the exposure time (4.7 s Quickshot scan).

You will be prompted to press the R button.

Left-handed arm: The secondary diaphragm and the sensor move all the way to the front and into the starting position for scanning.

Right-handed arm: The secondary diaphragm and the sensor return all the way to the back and into the starting position for scanning.

Now you can release the exposure.

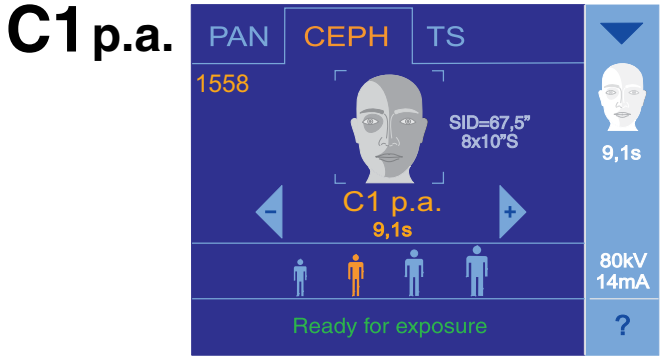


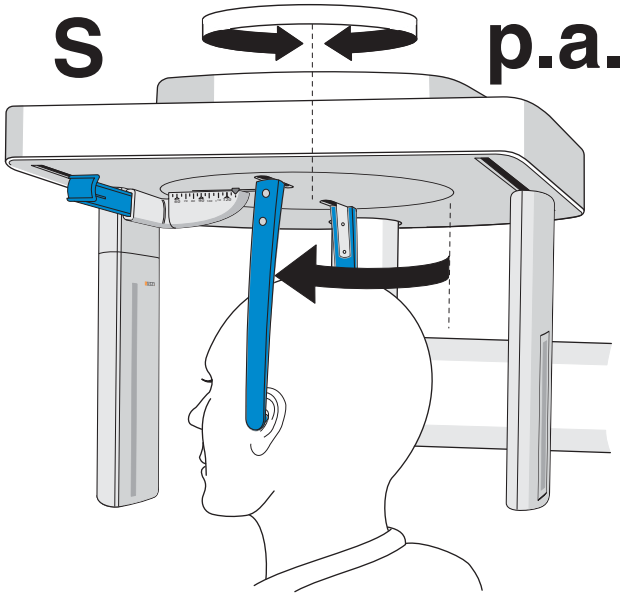
C3 and C3 F Lateral views with shadowing in the upper cranial region

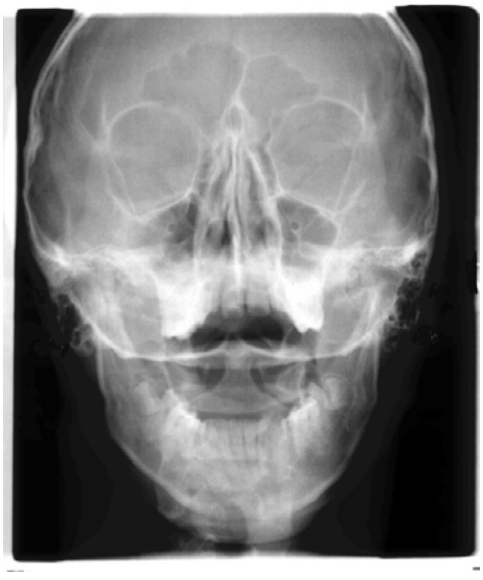
C3 and **C3 F** exposures also support shadowing in the upper cranial region.

To do this, touch the head icon in the Submenu column (8), and select the shadowing icon in the submenu line. It will then be displayed in the column (8).

Shadowing results in a dose reduction in the upper cranial region.







C1 p.a. views (S = symmetric)

Select ceph program **C1** using the **+/– arrow keys** on the touchscreen.

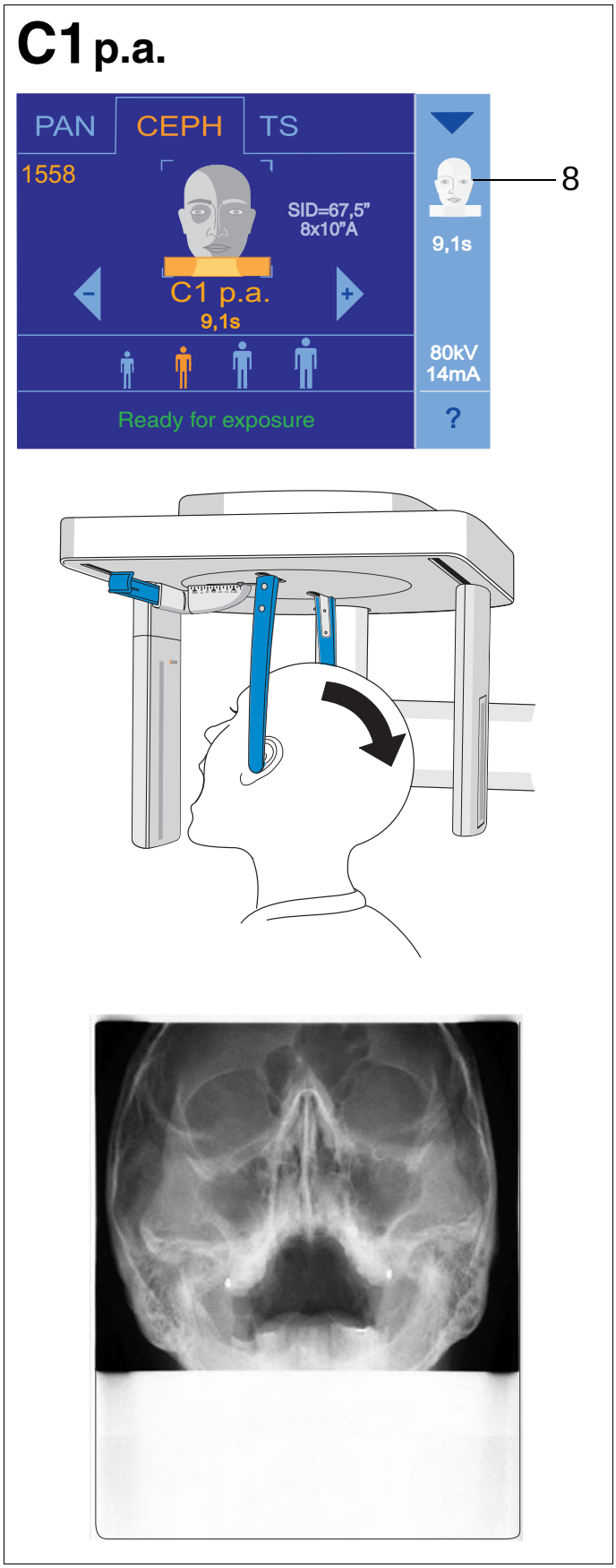
For symmetric exposures, the ear plug holders must be rotated by **90° into the S position**.

Rotate the ear plug holders by 90° so that the **folded-up** nose support points toward the sensor.

For a **symmetrical p.a. view**, have the patient turn so that he/she faces the sensor **(p.a.)**, once height adjustment is completed, but **before closing the ear plugs**. (This applies to both the left-handed and the right-handed ceph arm version).

Insert the ear plugs into the external auditory canals. Hold the ear plug holders at their **upper ends** when doing this.

Select the kV/mA values by touching one of the four patient symbols on the touchscreen.
You can also choose if you want to use half the exposure time (4.7 s Quickshot scan).



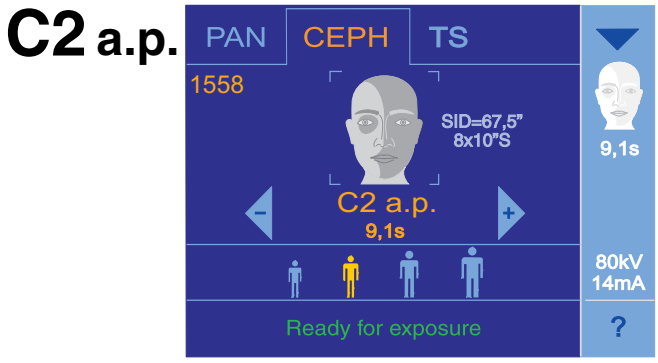
C1 p.a. views with shadowing in the thyroid area

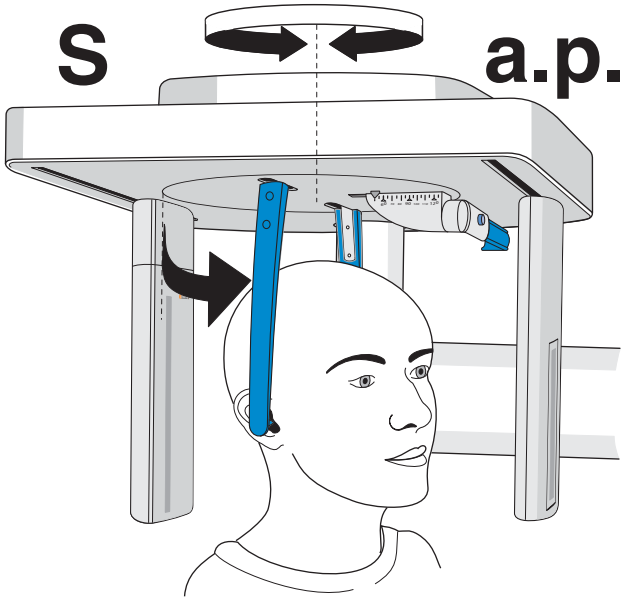
(only for "half-axial skull radiograph", off-axial cranial overview)

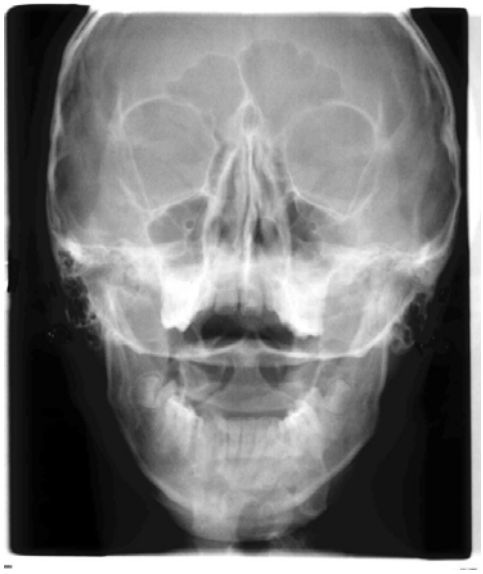
This exposure technique with the head reclined and the mouth open fully also supports shadowing in the thyroid area.

To do this, touch the head icon in the Submenu column (8), and select the shadowing icon in the submenu line. It will then be displayed in the column (8).

Shadowing results in a dose reduction in the thyroid area.







C2 a.p. views (S = symmetric)

Select ceph program **C2** using the **+/– arrow keys** on the touchscreen.

For symmetric exposures, the ear plug holders must be rotated by **90° into the S position**.

Rotate the ear plug holders by 90° so that the **folded-up** nose support points toward the secondary diaphragm.

For a **symmetrical a.p. view**, have the patient turn so that he/she faces the sensor **(a.p.)**, once height adjustment is completed, but **before closing the ear plugs**. (This applies to both the left-handed and the right-handed ceph arm version).

Insert the ear plugs into the external auditory canals. Hold the ear plug holders at their **upper ends** when doing this.

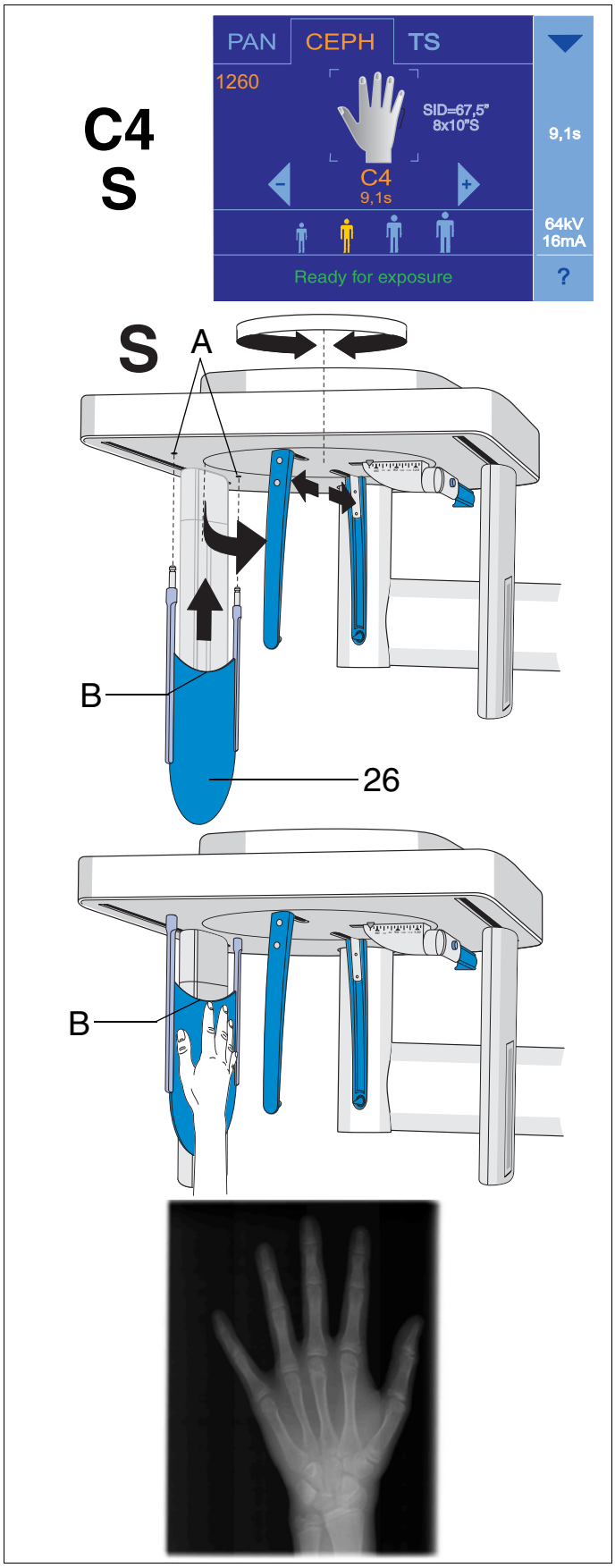
Select the kV/mA values by touching one of the four patient symbols on the touchscreen.
You can also choose if you want to use half the exposure time (4.7 s Quickshot scan).

C2 a.p. views with shadowing in the thyroid area

(only for "half-axial skull radiograph", off-axial cranial overview)

Just like the C1 p.a. view this exposure technique with the head reclined and the mouth open fully also supports shadowing in the thyroid area. (For head positioning and sample exposure see C1 p.a. view.)

Shadowing results in a dose reduction in the thyroid area.



C4 carpus views (S = symmetric)

For carpus views, the ear plug holders must be **in the S position**.

Seize the ear plug holders at their upper ends and push them outward as far as possible.

For **carpus views** you must rotate the ear plug holders by 90° in such a way that the **folded-up** nose support points toward the secondary diaphragm.
Hold the ear plug holders at their **upper ends** when doing this.

Seize the carpus support plate (26) at its left and right side and push it into the two holes (A) **until it engages**.

To remove the carpus support plate, seize it laterally and simply pull it out downward against a certain resistance.

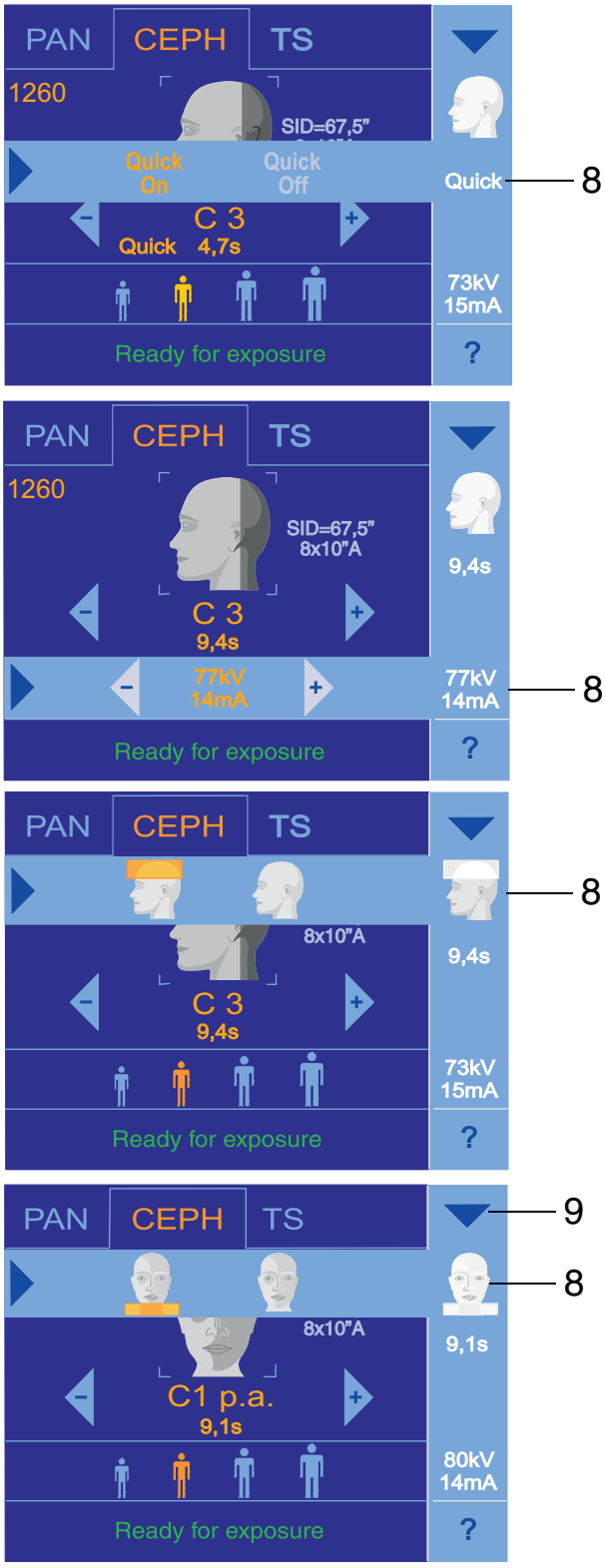
The carpus support plate can be disinfected by spraying or wiping.

Place the patient beside the cephalometer.
Have him/her place a hand flat on the support plate (right hand for the left-hand version and left hand for the right-arm version). The patient's fingertips must not extend beyond the upper edge (B). His/her hand and arm must form a straight line.

ATTENTION

The patient must press his/her hand against the support plate only slightly!

10.4 Selecting the exposure parameters



Program settings (options)

When you touch a symbol in the “submenu” column (8), a submenu line for program settings opens.

There are various submenu lines for program settings available:

1. Quickshot program setting – reduction of exposure time (general)

When you touch the exposure time in column (8), another submenu line opens.

Here you can select for each C program whether you want to use a shorter exposure time for acquiring the image (Quickshot scan).

2. Manual setting of kV/mA values (general)

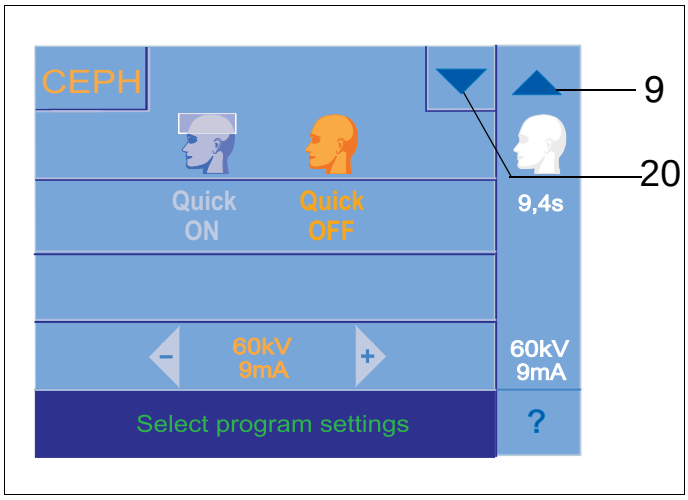
If the default kV/mA combinations do not provide satisfactory results, you can preselect intermediate kV/mA values in this submenu.

3. Shadowing in the upper cranial region (only for programs C3 and C3 F)

C3 and C3 F lateral views let you choose if you want to enable shadowing in the upper cranial region. This will result in a local dose reduction.

4. Shadowing in the thyroid area (only for programs C1 p.a. and C2 a.p. for “half-axial skull radiograph”, off-axial cranial overview):

Only this exposure technique with the head reclined and the mouth open fully lets you preselect for C1 p.a. and C2 a.p. views if you want to enable shadowing in the thyroid area. This will result in a local dose reduction.



Basic settings for the entire menu
Level 2

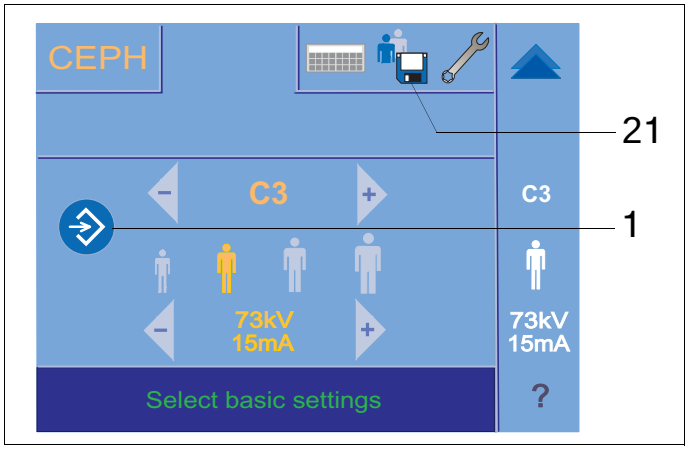
You may also display all of the program settings and make the settings described above in a second program level.

To access the second program level, touch the blue arrow (9) in the upper right corner of the touchscreen; the arrow will point upward then.

After having made your selections, you can return to program level 1 only by touching the blue arrow (9) once again.

NOTE
When you confirm the exposure with the R button, the program settings changed in these submenu lines will automatically be reset to the default settings.

10.5 Making the basic settings in program level 3



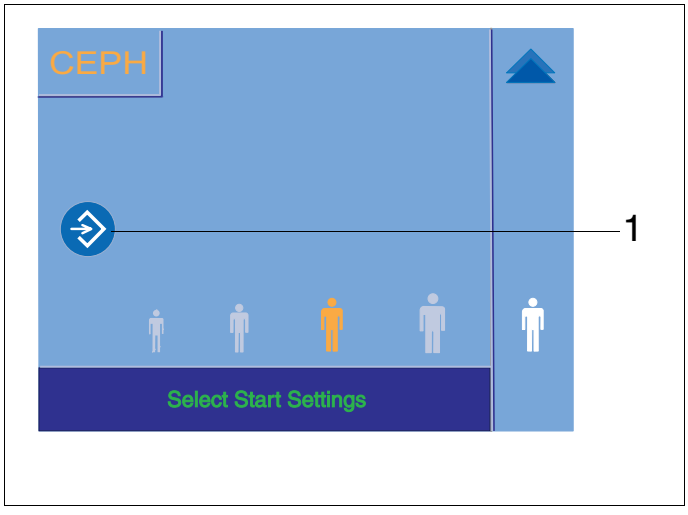
To access the third program level, touch the down arrow (20) in the second program level.

Programming the patient symbols

You may enter new kV/mA values for the preselected exposure program and for the respective preselected patient symbol in the center area.

Programming is done by touching the memory symbol (1).

10.6 Changing the startup settings in program level 4

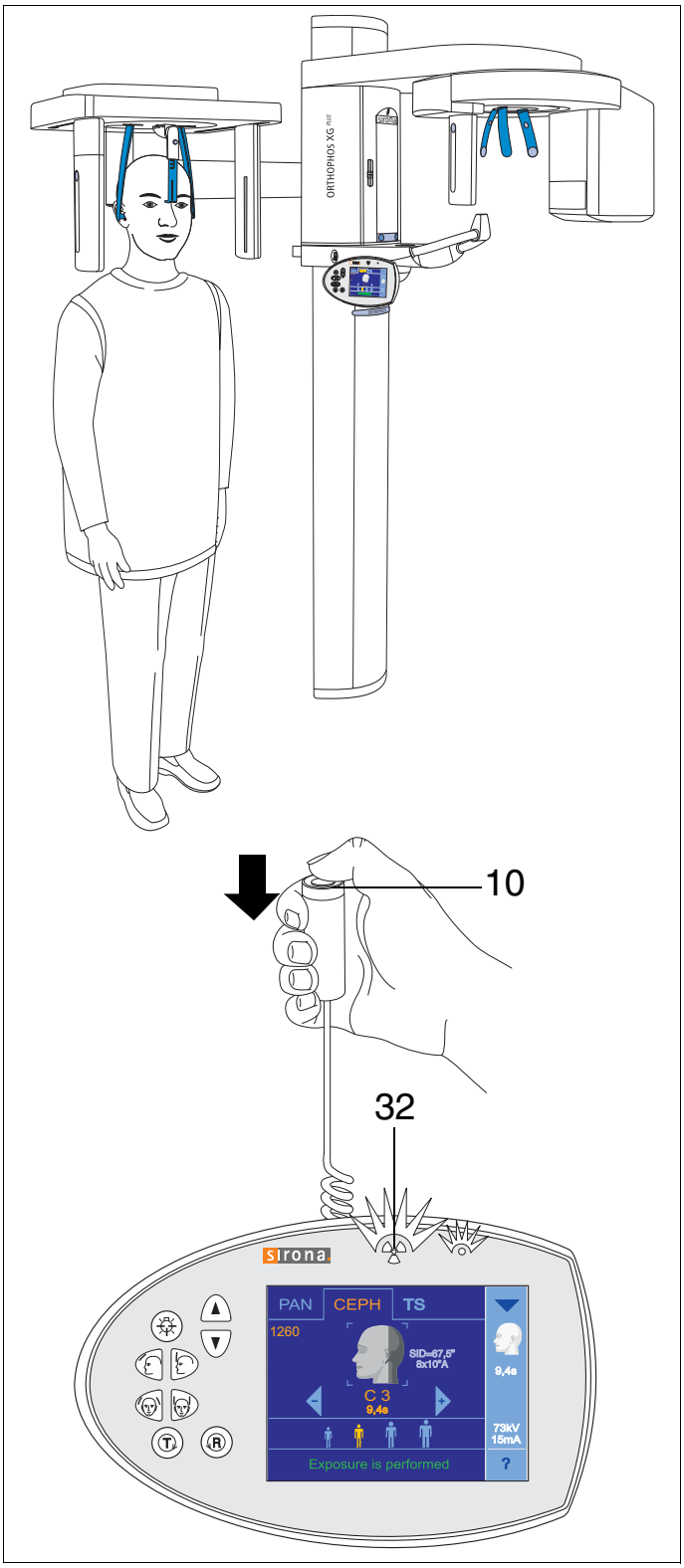


You can access program level 3 by touching the disk icon (21) in level 4.
In level 4 you can modify any factory-programmed startup parameters.
They are then displayed after switching on the system and for each new exposure.

You can only change the patient icon preference (2nd icon from the left, as per factory setting).

Programming is done by touching the memory symbol (1).

10.7 Releasing a cephalometric exposure



NOTE

*The movements of the unit must not be obstructed by physical constitution nor clothing, dressings, wheelchairs or hospital beds! Perform a test cycle with the **"T"** key, see also **"General safety information"**.*

- **Observe the radiation protection regulations (see also chapter 1 "Identification of warning and safety information").**

NOTE

There must not be any help message displayed in the comment line of the touchscreen.
*The message "**Ready for exposure**" must appear.*

ATTENTION

The patient's arms must hang down freely at the sides, he/she must not pull up his/her shoulders.
Advise the patient not to move his/her head in any way during the scan and watch yourself to make sure that this does not happen!

Trigger the exposure scan by **pressing and holding down the exposure release button** (10).

While radiation is active the optical radiation indicator (32) is illuminated.

In addition, an **acoustic signal** sounds throughout the entire radiation time.

ATTENTION

Take care not to let go of the exposure release button prematurely. Wait until the unit has completed the exposure cycle.

- The exposure cycle is complete when...
  ... the touchscreen comment line switches from "**Exposure is performed**" to "**Please wait**".
  ... a row of dots "**.....**" appears alternately with the program number on the remote control display.
  ...a short pulsed tone sequence also can be heard at the end of the exposure (this function can be deactivated by your service engineer).

NOTE

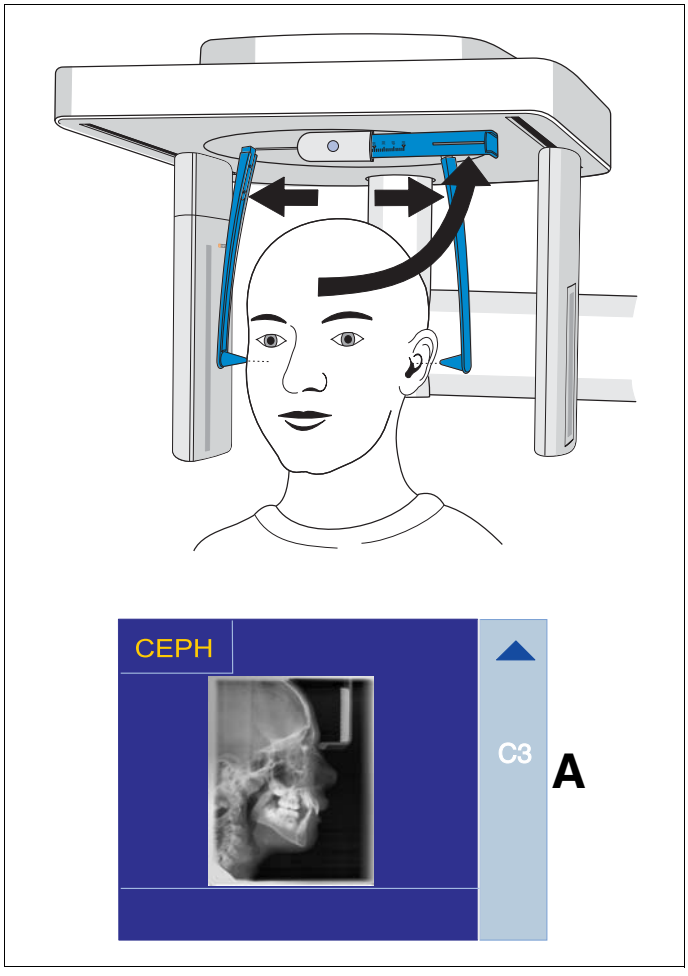
*The end of the exposure cycle can also be seen on the SIDEXIS monitor, namely when the **progress indicator shows 100 %** and the preview image starts to build up.*

Left-handed arm: Scanning operation from front to rear, secondary diaphragm and sensor remain at the rear in the position required for positioning of the next patient.

Right-handed arm: Scanning operation from rear to front, secondary diaphragm and sensor automatically return to the rear after the exposure to facilitate positioning of the next patient.

ATTENTION

*When using the right-handed ceph arm version, be sure to explain the entire exposure procedure to the patient. The patient may leave only **after** the exposure has been taken **and** the secondary diaphragm and sensor have automatically returned from the cephalometer.*



Once the exposure has been completed, push the ear plug holders outward as far as possible; with a lateral view, pull the nose support toward the front as far as possible and fold it up toward the side.
The patient may now step out of the unit.

After completion of the exposure

the X-ray image is displayed on the PC monitor in SIDEXIS.

In addition, a small preview image (A) is displayed on the touchscreen; it is not suitable for diagnostic purposes. You **must** close the preview image again by touching the touchscreen.

The exposure mode, exposure program, tube voltage, tube current, real radiation time, **dose area product** and shadowing (depending on the exposure program) are again displayed on the touchscreen.

- Acknowledge the exposure time actually needed by pressing the return key **(R)**.
- Then reset the rotating element to its starting position by pressing the return key **R** a second time.
- **With a left-handed version**, you must press the **R** key again to move the secondary diaphragm and the Ceph sensor to the exposure position after positioning the next patient.

Canceling an exposure

If you let go of the exposure release button prematurely, the exposure is canceled.

The message “**R button, confirm exposure data**” are displayed in the comment line.

The exposure time and dose area product display readings flash following exposure cancellation. The exposure time which had elapsed prior to cancellation is displayed.

- Confirm by pressing the **R** key on the Easypad.
- Press the **R** key again. The X-ray tube assembly moves to the starting position and the secondary diaphragm and Ceph sensor move forward into the exposure position.
- Then the exposure can be repeated.

NOTE

Please note that any program settings which may have been changed must be preselected again before repeating the exposure.

Automatic exposure blocking

(thermal protection of the tube)

Premature release of a new exposure is prevented by the automatic exposure blocking function.

When you press the exposure release button, the message "
Ready for exposure in "XX" seconds" appears in the comment line of the touchscreen.

The remaining cooling time is counted down and is displayed under **"XX"**.

Only after the cooling period has elapsed is it possible to release a new exposure.

NOTE

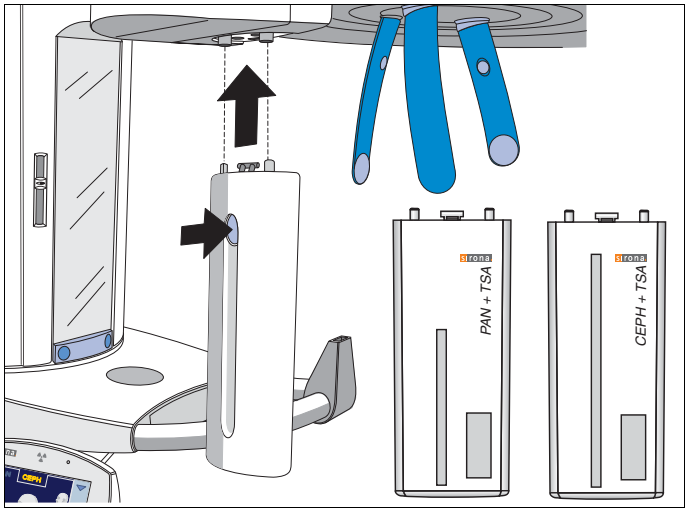
If the exposure sequence P1–C3–C4 (in this order) has been selected in SIDEXIS, there are shorter cooling periods between the individual programs.
However, after the entire program sequence has been processed, a longer cooling period is required.

11 Transversal slices (TSA)

11.1 Preparing a TSA exposure

In combination with a panoramic slice view, transversal slices enable a 3-dimensional representation of the different maxillary and mandibular regions.

- Switch on the unit and make SIDEXIS ready for exposure.

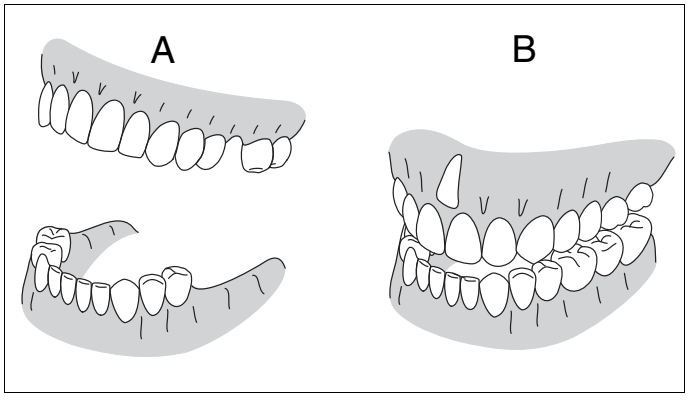


Plug in TSA sensor

- Make sure that a TSA sensor is plugged into the PAN slot –
  either ***PAN + TSA*** or ***CEPH + TSA***

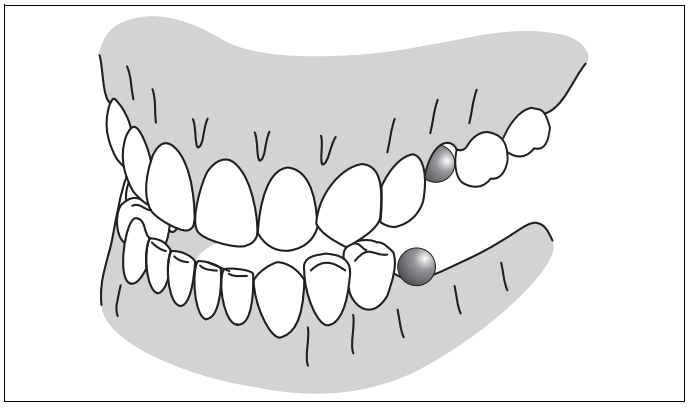
ATTENTION

DO NOT DROP THE SENSOR!
A shock sensor for detecting shocks or drops is built in.



TSA application

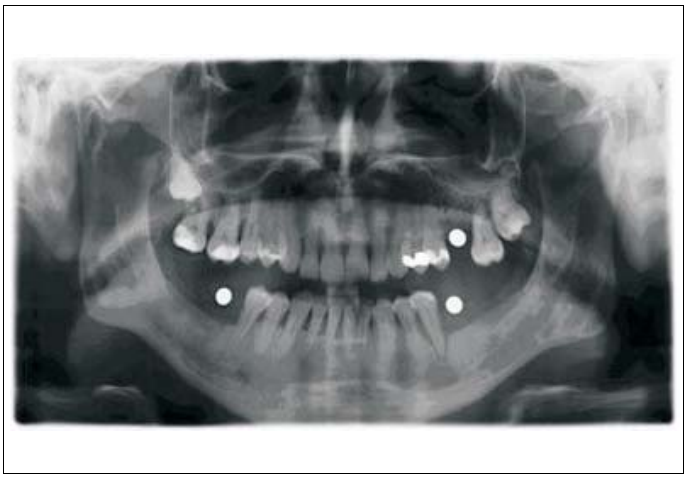
TSA imaging is used for example for implant insertion (A) or displaced teeth (B).



Ball positioning

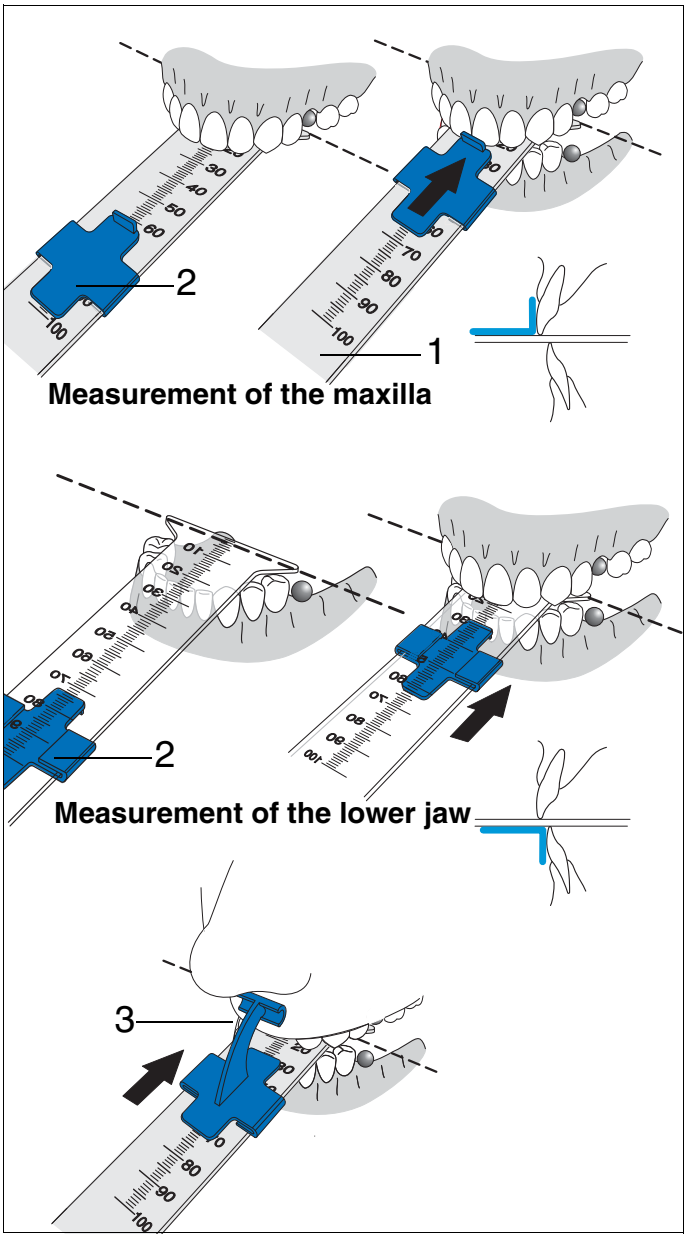
Prior to the exposure you must fix a steel ball (e.g. with a diameter of 5 mm) at the planned implant placement point by means of elastic impression wax.

(This step is not required for a displaced tooth)



PAN image

For better assessment of the anatomical situation you capture a PAN image first.



Measurement by means of the TSA scale

- Measure the depth from the anterior teeth to the tooth or region to be X-rayed in the mandible or the maxilla using the TSA scale.
- This measurement must be taken very precisely in order obtain a good result.

ATTENTION

Thoroughly disinfect the TSA scale before using it, e.g. by spray disinfection.

Position the TSA scale (1) in the oral cavity so that its wide zero point begins at the center of the tooth to be examined in the mandible or maxilla. Turn the scale over when measuring the mandible (scale facing down).

Slide the measuring caliper (2) up to the maxillary anterior teeth when measuring the maxilla and up to the mandibular anterior teeth when measuring the mandible.

NOTE

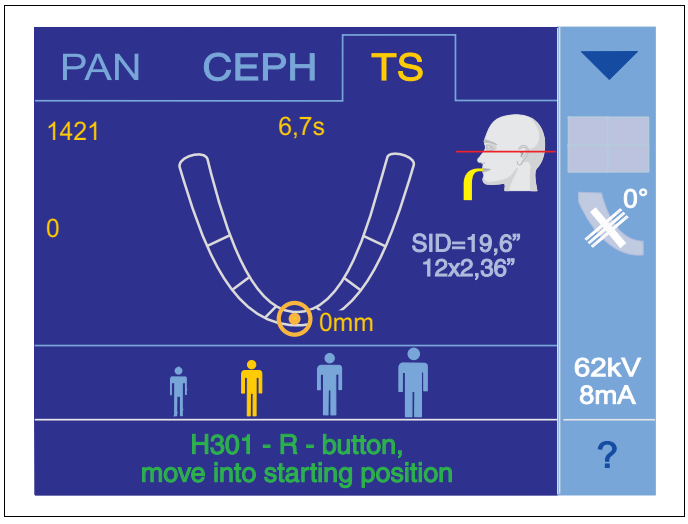
The patient's overbite must be taken into account when placing the measuring caliper against his/her mandibular or maxillary anterior teeth.

On patients without anterior teeth, slide the measuring adapter (3) with the subnasal contact segment up to a point beneath the nose.

Remove the TSA scale from the oral cavity and read and remember the distance from the scale.

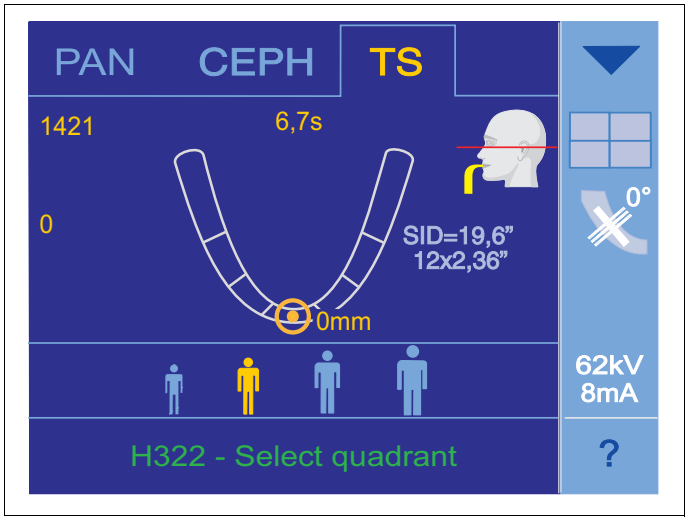
NOTE

When positioning the patient for TSA, a possible anomaly of his/her anterior teeth must be taken into account. This is done by placing the patient's anterior teeth (upper or lower jaw) in the corresponding indentation of the bite block. Otherwise the measured distance will not match the patient's actual position.
The universal bite block also facilitates this procedure.



Preselecting the TSA function

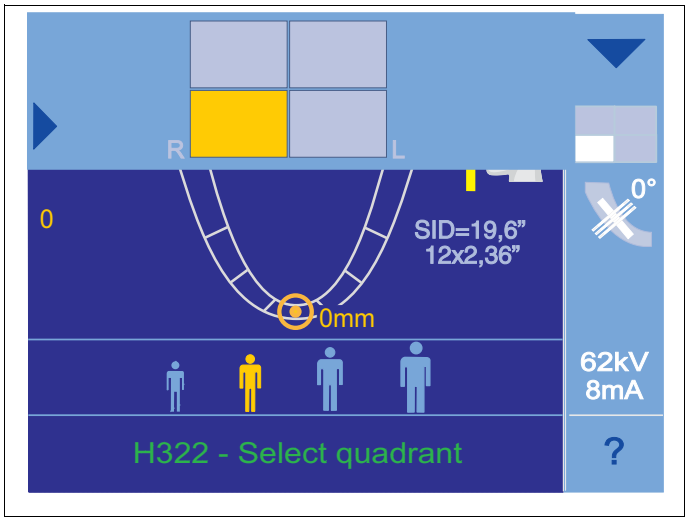
- Preselect the TSA function by touching "**TS**" in the program group selection on the touchscreen.
  The TSA screen appears.
  The diaphragm and the sensor move into the TSA position.
  Proceed according to the help message displayed in the comment line.



ATTENTION

Make sure that no patient is in the movement range of the PAN rotating element while the unit is moving.

- Move the PAN rotary ring to the starting position for TSA exposures by pressing the **R** key.
  A message in the comment line prompts you to select a quadrant.
- Touch the quadrant symbol at the top of the submenu column.



- The quadrant selection submenu appears.
  Touch the quadrant where the tooth you want to examine is located.
  The selected quadrant is highlighted in orange color.
  The respective quadrant in the submenu column is represented in white color at the same time.

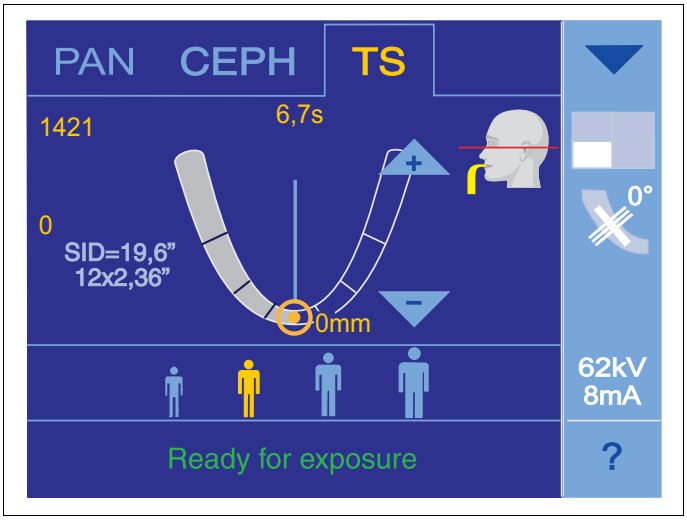
NOTE

You cannot select more than one quadrant at a time.

- Close the submenu by touching the quadrant symbol in the submenu column or the blue arrow at the left margin of the submenu.

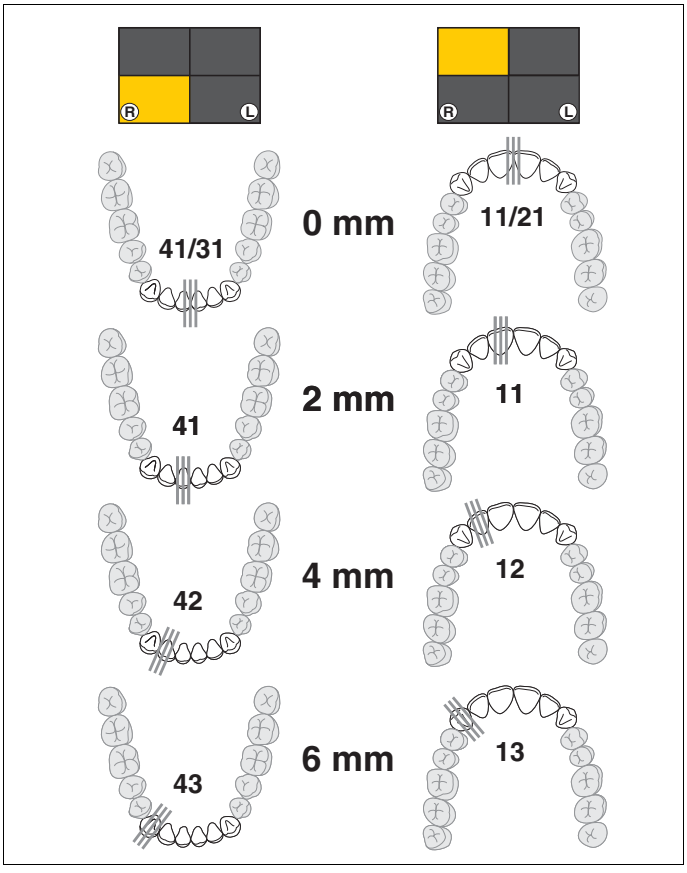
NOTE

The quadrant preselection must be repeated for each TSA exposure.



Transferring the measured depth

- The jaw half where the preselected quadrant is located appears in a light gray color now.
  The orange linear sensor is at 0 mm.
- The depth measured by means of the TSA scale must be transferred to the TS image now.
  This is done with the **+** (to the rear)
  and **–** (to the front) arrow keys.
  The arrows are on the opposite side of the light gray jaw half.
  When you leave your finger on the corresponding arrow, the depth indicator and the orange linear sensor automatically move into the related direction.



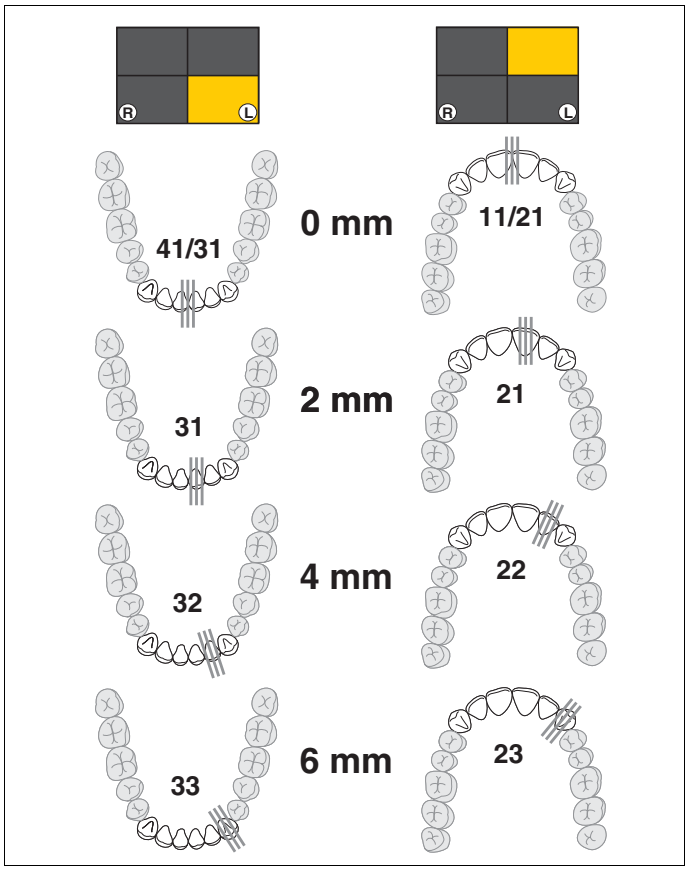
The following reference tables apply to the anterior and canine tooth region.

For a symmetric view of the anterior teeth, **31/41** in the lower jaw or **11/21** in the upper jaw, enter **0 mm**.

For anterior teeth **11** (upper jaw right) or **41** (lower jaw right) enter **2 mm**.

For anterior teeth **12** (upper jaw right) or **42** (lower jaw right) enter **4 mm**.

For canine teeth **13** (upper jaw right) or **43** (lower jaw right) enter **6 mm**.



For a symmetric view of the anterior teeth, **31/41** in the lower jaw or **11/21** in the upper jaw, enter **0 mm**.

For anterior teeth **21** (upper jaw left) or **31** (lower jaw left) enter **2 mm**.

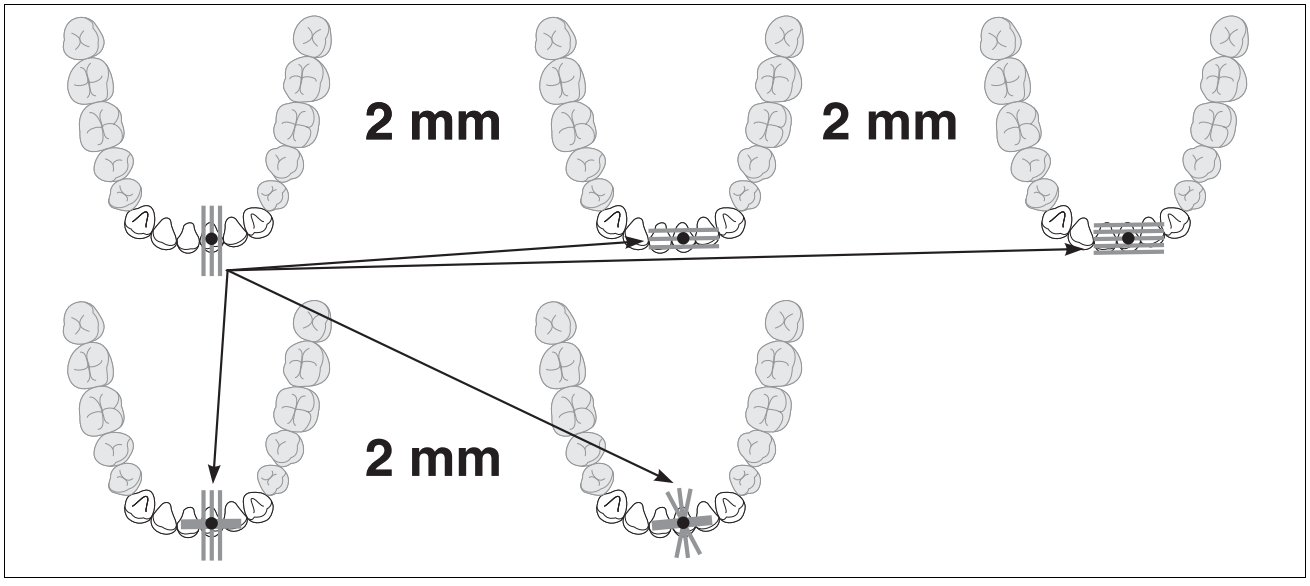
For anterior teeth **22** (upper jaw left) or **32** (lower jaw left) enter **4 mm**.

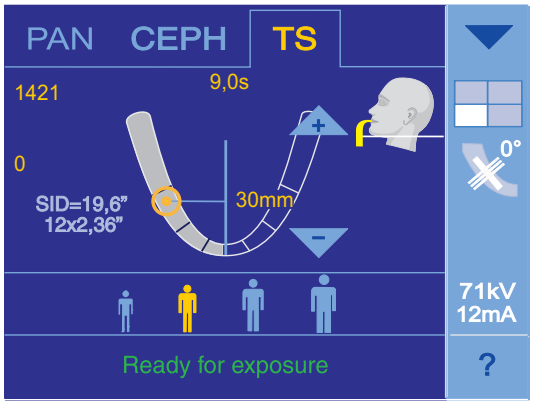
For canine teeth **23** (upper jaw left) or **33** (lower jaw left) enter **6 mm**.

NOTE

The illustrations show examples of the relationships based on TSA slice orientations.

Applicability of mm tables to other slice orientations

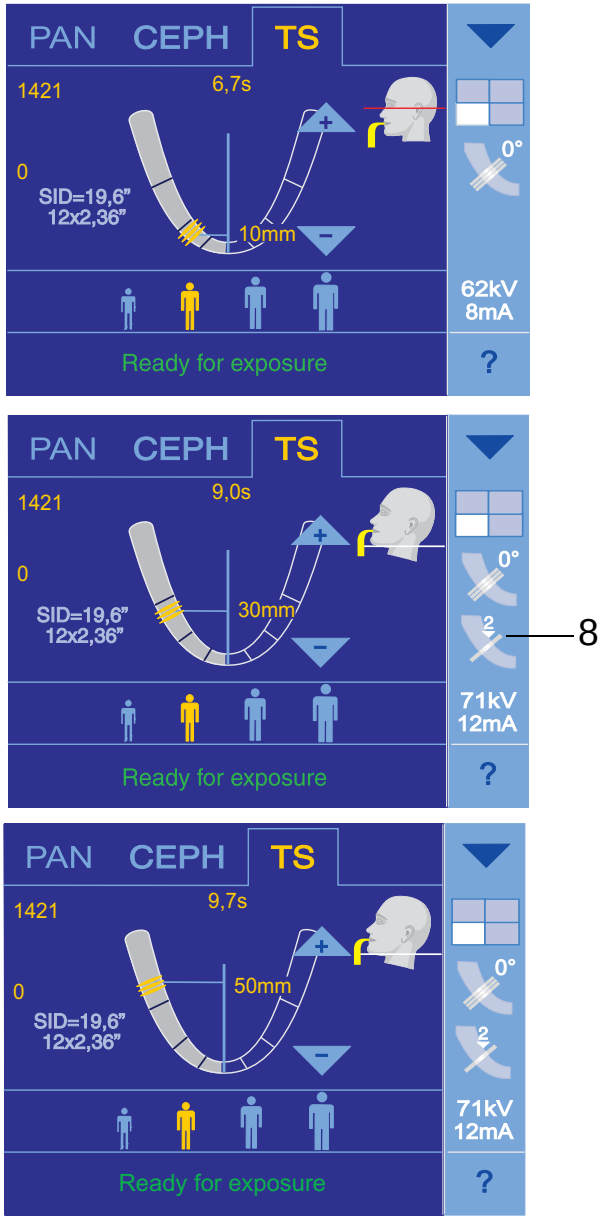




TS slices combined with a thick longitudinal slice (standard) for lower jaw

(3 transversal slices with embedded lateral slice)

In this slice orientation, the cursor is shown as a dot in a circle.



Example for the slice orientation of TS slices (alternative) for the lower jaw

In this sequence, the cursor schematically assumes the form of the 3 TS slices.

Input assistance

Lower jaw

The dental arch is subdivided into several segments.

When you touch the light gray dental arch in the front segment, the depth indicator jumps to 10 mm.

The patient head symbol shows the setting according to the the Frankfort Horizontal plane (FH) and the **yellow** bite block for the mandibular exposure.
The line displayed on the head symbol on the touch-screen indicates the reflection line of the light localizer.

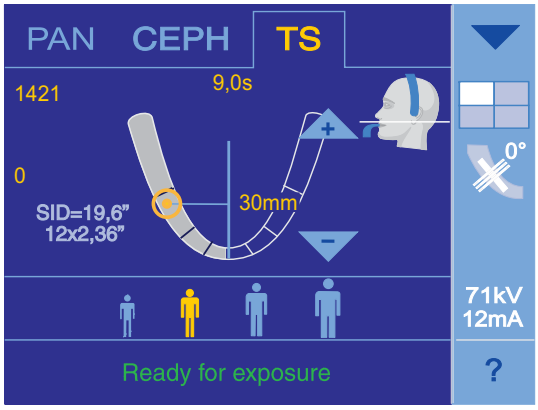
When you touch the light gray dental arch in the center segment, the depth indicator jumps to
30 mm; when you touch it in the rear segment, the depth indicator jumps to 50 mm.
At the same time the submenu column (8) displays an icon for preselecting the slice thickness.
Slice thickness is preset to 2 mm. You can also preselect slice thicknesses of 6 mm or 8 mm in this submenu.

NOTE

If a slice thickness is selected that deviates from the TSA slice orientation, no preselection of the slice thickness is possible.
The "slice thickness preselection" symbol then disappears in column (8).

The patient head symbol is bent dorsally (reclined) so that the lower edge of the mandible is parallel to the floor, and the **yellow** bite block for mandibular exposures is shown.
The line displayed on the head symbol on the touch-screen is used here only for orientation.

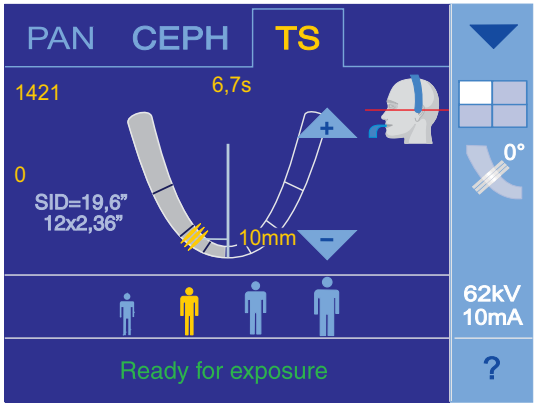
This facilitates input of the correct values with the arrow keys.



TS slices combined with a thick longitudinal slice (standard) for upper jaw

(3 transversal slices with embedded lateral slice)

In this slice orientation, the cursor is shown as a dot in a circle.



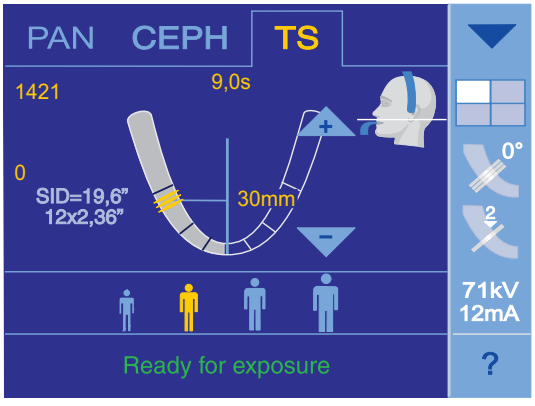
Example for the slice orientation of TS slices (alternative) for the upper jaw

Input assistance

Upper jaw

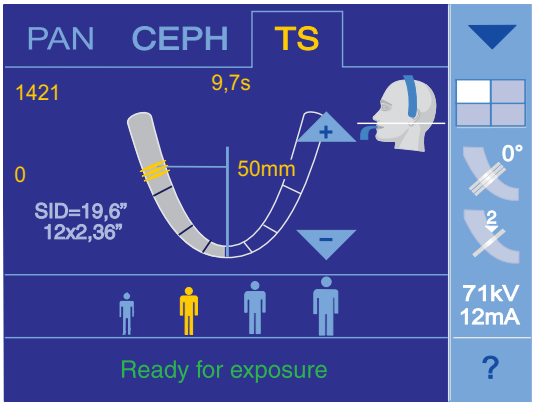
When you touch the light gray dental arch in the front segment, the depth indicator jumps to 10 mm.

The patient head symbol shows the setting according to the the Frankfort Horizontal plane (FH) and the **blue** bite block for the maxillary exposure.
The line displayed on the head symbol on the touch-screen indicates the reflection line of the light localizer.



When you touch the light gray dental arch in the center segment, the depth indicator jumps to 30 mm;
when you touch it in the rear segment, the depth indicator jumps to 50 mm.

At the same time the submenu column (8) displays an icon for preselecting the slice thickness.
Slice thickness is preset to 2 mm. You can also preselect slice thicknesses of
6 mm or 8 mm in this submenu.



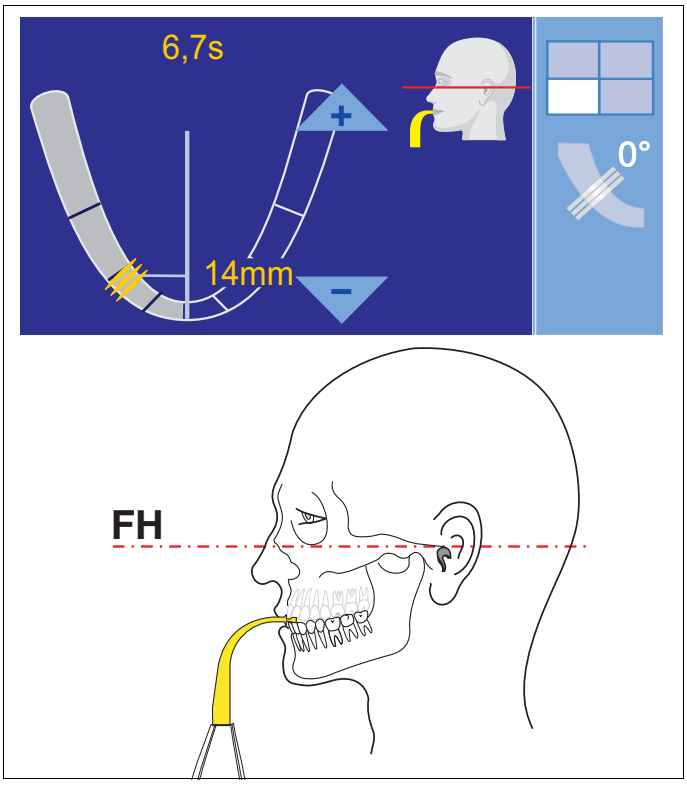
NOTE

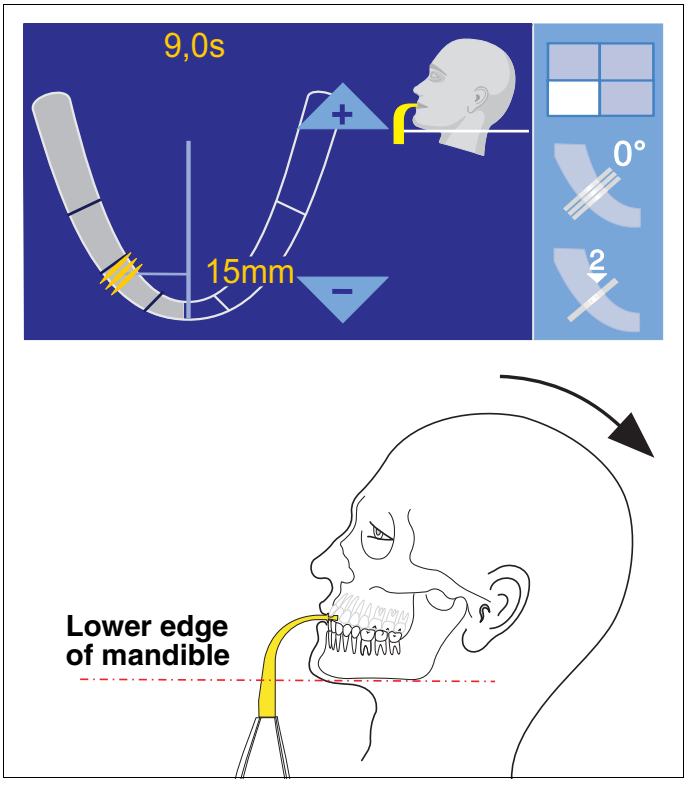
If a slice thickness is selected that deviates from the TSA slice orientation, no preselection of the slice thickness is possible.
The "slice thickness preselection" symbol then disappears in column (8).

The patient head symbol is **slightly** bent dorsally (reclined) so that the alveolar ridge is parallel to the floor, and the **blue** bite block for maxillary exposures is shown.
The line displayed on the head symbol on the touch-screen is used here only for orientation.

This facilitates input of the correct values with the arrow keys.

11.2 Patient positioning





General remarks on patient positioning

The following descriptions apply to all of the slice orientations supplied.

Always position the patient according to the information provided for the particular exposure program.

Please observe:
Center of the face or FH setting with the light localizer.
Cervical vertebrae stretched by having patient take a small step towards the column.

Ask the patient to grasp the handles.

Have the patient bite into the indentation of the bite block, placing his/her upper anterior teeth into the indentation and pushing his/her lower anterior teeth forward as far as possible, or placing his/her subnasale against the contact segment).

Move the forehead support as far as possible up to the patient's forehead.

Close the temple supports.

For maxillary views, you must fit the temporomandibular joint supports with the sterilizable contact pads.

NOTE

We recommend that you perform a test cycle without radiation with the "T" key prior to starting the exposure to make sure that the tube assembly and sensor do not collide with the patient's head.

Mandibular anterior and canine teeth

When you enter a depth of up to and including 14 mm, the patient head symbol remains in the FH position.

Fit the **yellow** bite block.

Position the patient's head according to the Frankfort Horizontal FH.
The line displayed on the head symbol on the touchscreen indicates the reflection line of the light localizer.

Mandibular molars

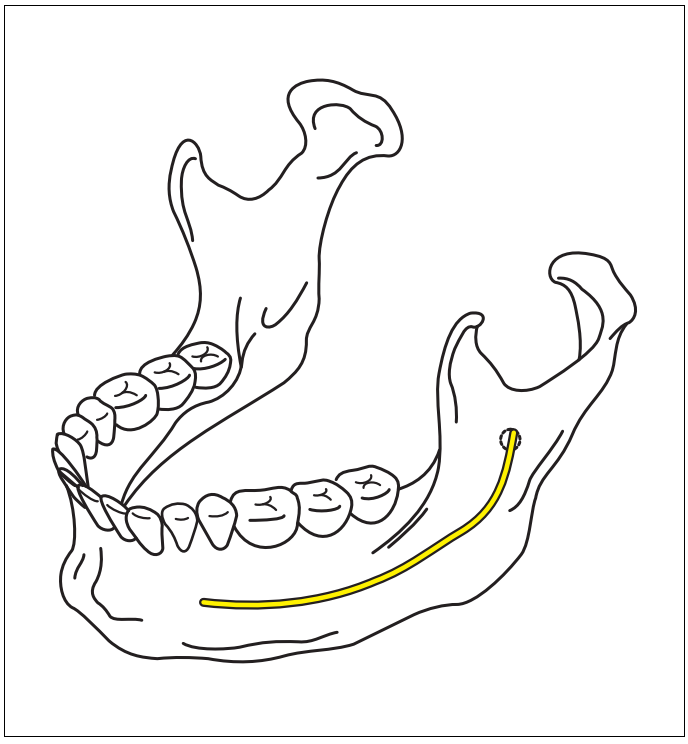
When you enter a depth of 15 mm or more, the patient head symbol changes and is bent dorsally (reclined) now.

Fit the **yellow** bite block.

Have the patient recline his/her head dorsally to the point where the lower edge of the mandible is parallel to the floor.
The line displayed on the head symbol on the touchscreen is used here only for orientation.

In the TSA slice orientation, the submenu column displays an icon for preselecting the slice thickness.
The slice thickness is preset to 2 mm. You can also preselect slice thicknesses of
6 mm or 8 mm in this submenu.

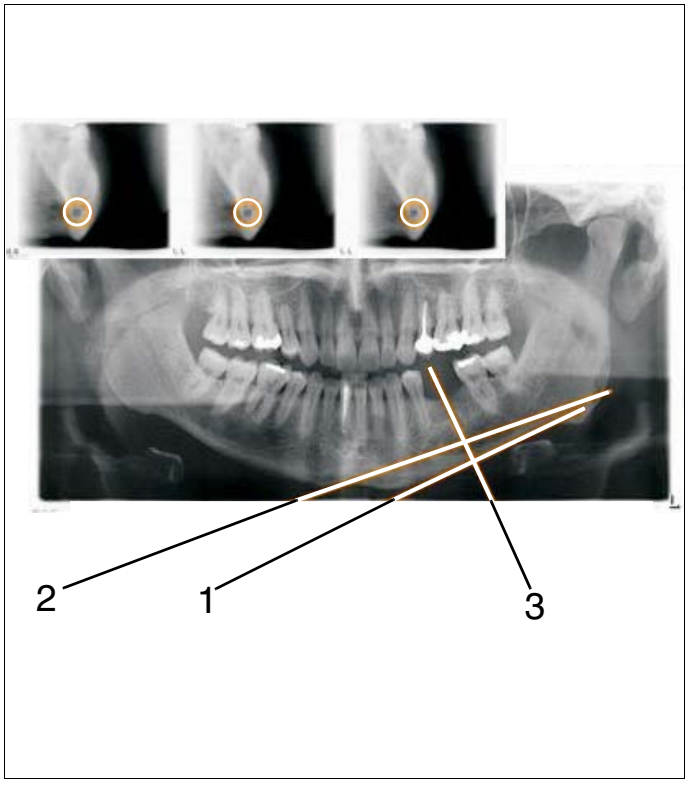
Make sure that the TSA slice is at a right angle to the root of the tooth.



Mandibular canal

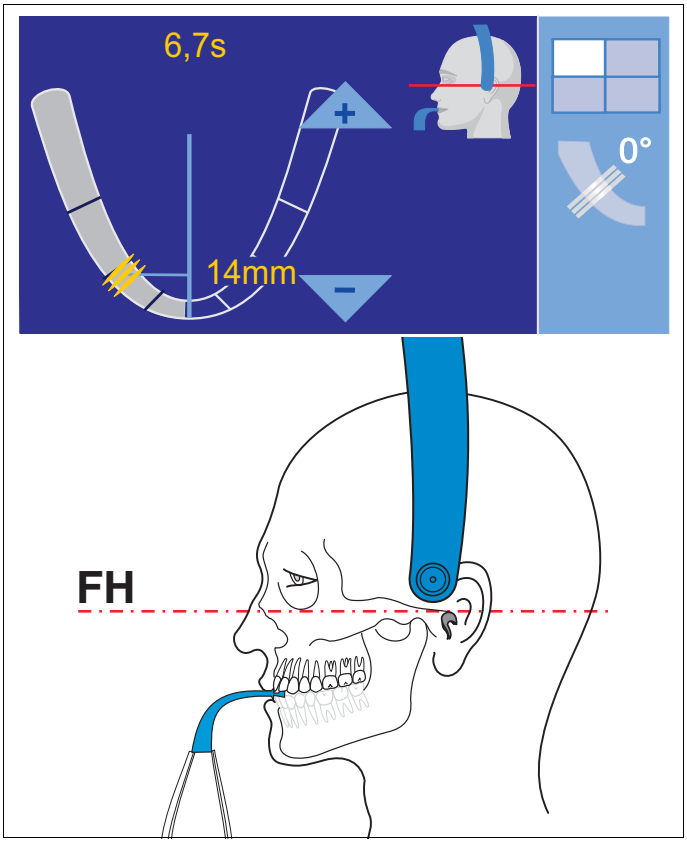
ATTENTION

In the mandibular molar region, a good visualization of the mandibular canal in the transversal slices can be achieved by aligning the canal parallel to the central X-ray beam.



Since the central X-ray beam is angled 7 degrees up from horizontal for panoramic exposures, it may be necessary to tilt the lower edge of the mandible out of the horizontal plane (head bent more forward or backward).

1. Lower edge of mandible
2. Relative position of the mandibular canal
3. Slice plane



Maxillary anterior and canine teeth

When you enter the depth, the patient head symbol remains in the FH position.

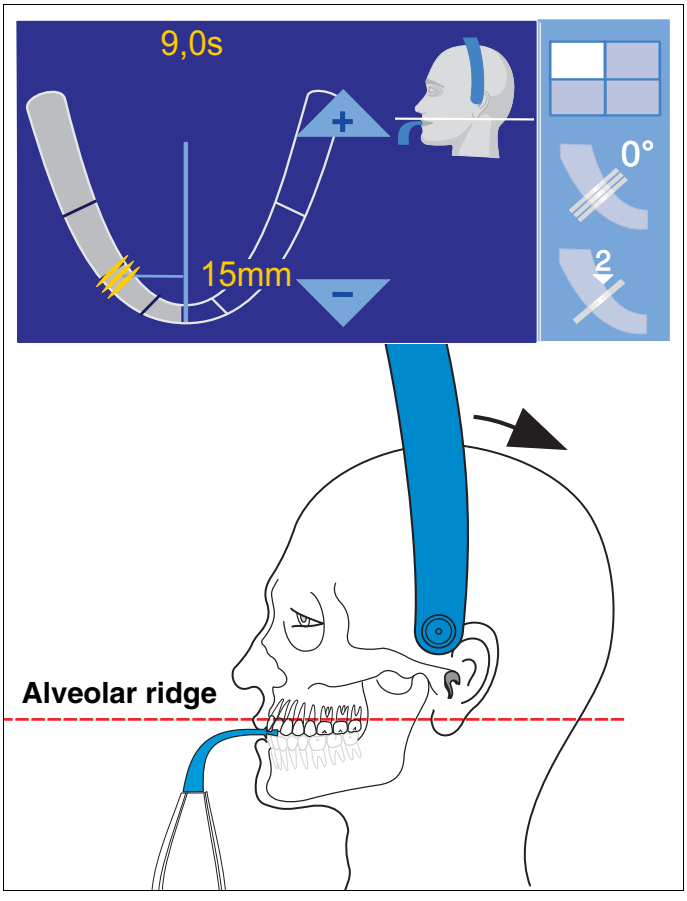
Fit the **blue** bite block (or contact segment).

Remove the temple supports, replacing them with the two temporomandibular joint supports "**1**" (right) and "**2**" (left) with sterilized contact pads.

Position the patient's head in the Frankfort Horizontal (FH) plane.

NOTE

For devices until October 2006:
Please observe the orientation (right/left) of the temporomandibular joint supports specified on page 28.



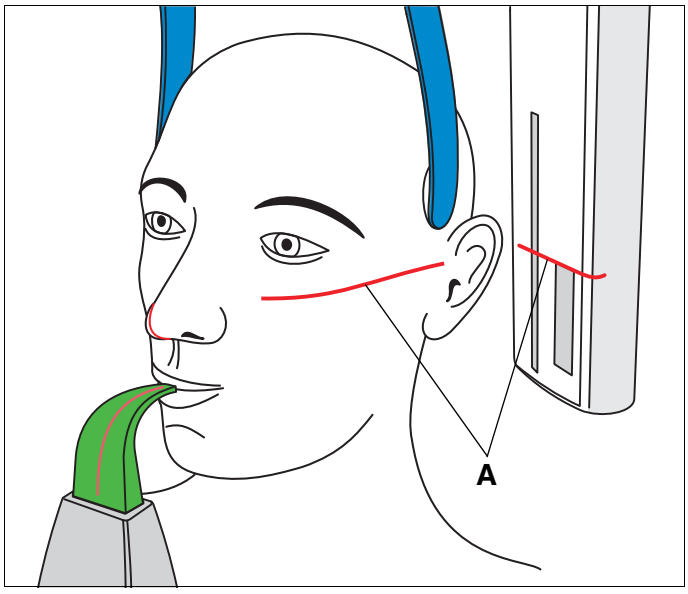
Maxillary molar teeth

When you enter a depth of 15 mm or more, the patient head symbol changes and is bent dorsally (reclined) now.

Insert the **blue** bite block (or contact segment) or the TSA universal bite block (blue marking) and the temporomandibular joint supports with sterile contact pads.

Have the patient bend his/her head dorsally until the alveolar ridge is parallel to the floor.

In the TSA slice orientation, the submenu column displays an icon for preselecting the slice thickness.
The slice thickness is preset to 2 mm. You can also preselect slice thicknesses of
6 mm or 8 mm in this submenu.

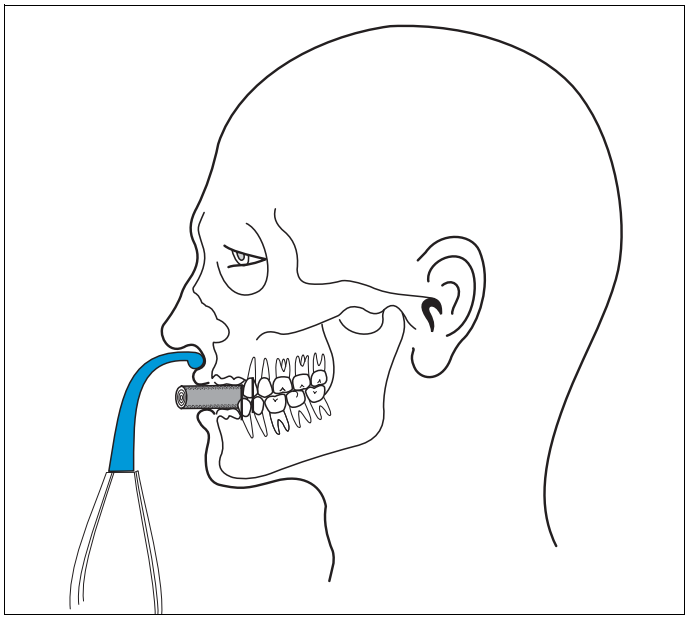


In cases where you need more information in the central facial area you can use the **green** bite block (or contact segment) included in the scope of supply.

This positions the patient a little lower in relation to the beam path.

The light localizer beam **(A)**, which reflects also on the sensor, can be used as an auxiliary tool. Set the light beam to the upper edge of the TSA display on the sensor.

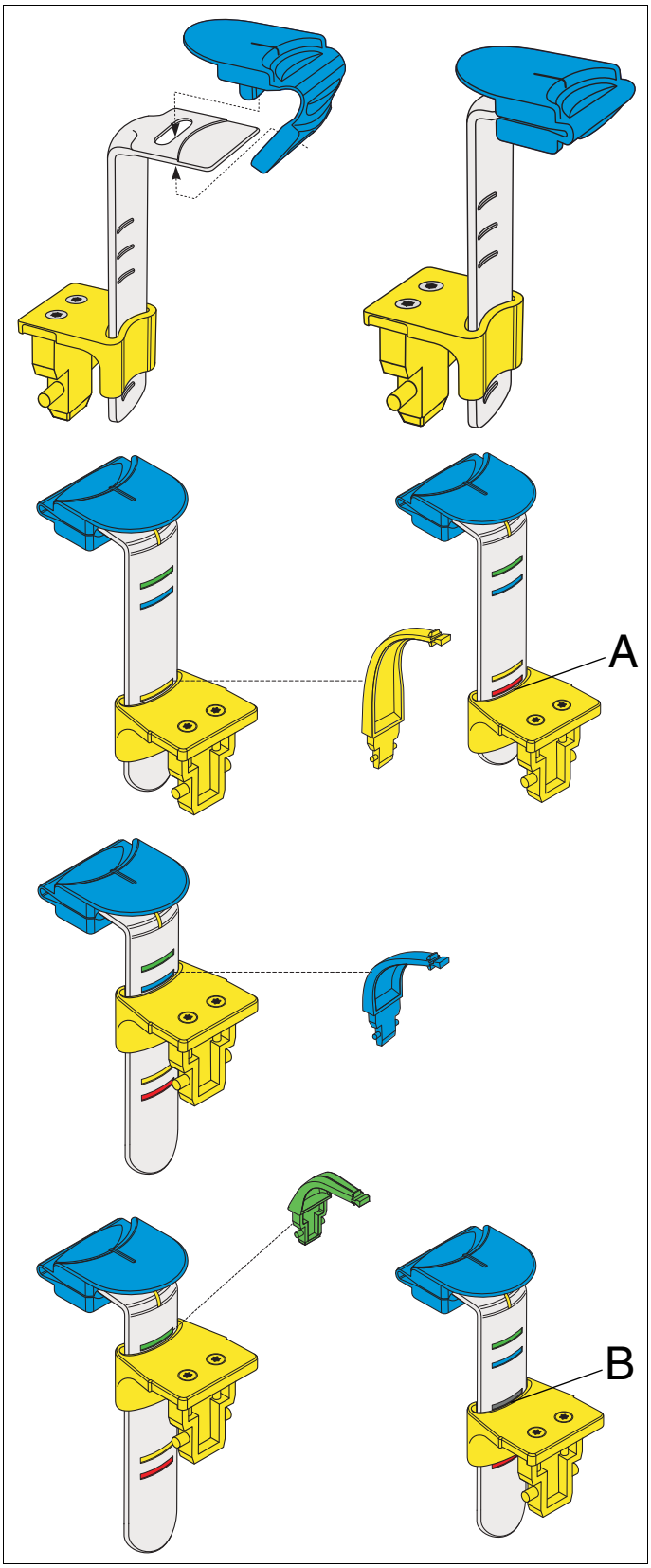
The simultaneous reflection of the light beam **(A)** on the patient's face marks the top edge of the exposure and helps you decide whether you need the **blue** or the **green** bite block (or contact segment).



ATTENTION

If you have a patient without anterior teeth, always place a cotton pellet between his/her jaws as illustrated!

11.3 TSA universal bite block



The universal bite block replaces all other bite blocks and contact segments for TSA exposures.
It features a bite block slide with different colored marking lines. The colors of the marking lines are identical to the colors of various different bite blocks.

A replaceable bite block foam (single use device) is used for the bite impression. This soft bite block foam can also be used for patients who have no front teeth.

Insert the pins of the upper part in the opening of the bite block slide, fold the bite block foam down and snap the lower part onto the pins of the upper part.

Bite block foam (single use device), 100 pcs.
Order No. 61 41 449

Insert the universal bite block in the bite block holder and set the bite block slide according to the type of exposure:

Yellow mark for mandibular TSA exposures.

If the mandibular ramus is not displayed on the TSA exposure and the crowns of the teeth are not necessarily of interest, then use the **red mark (A)**.

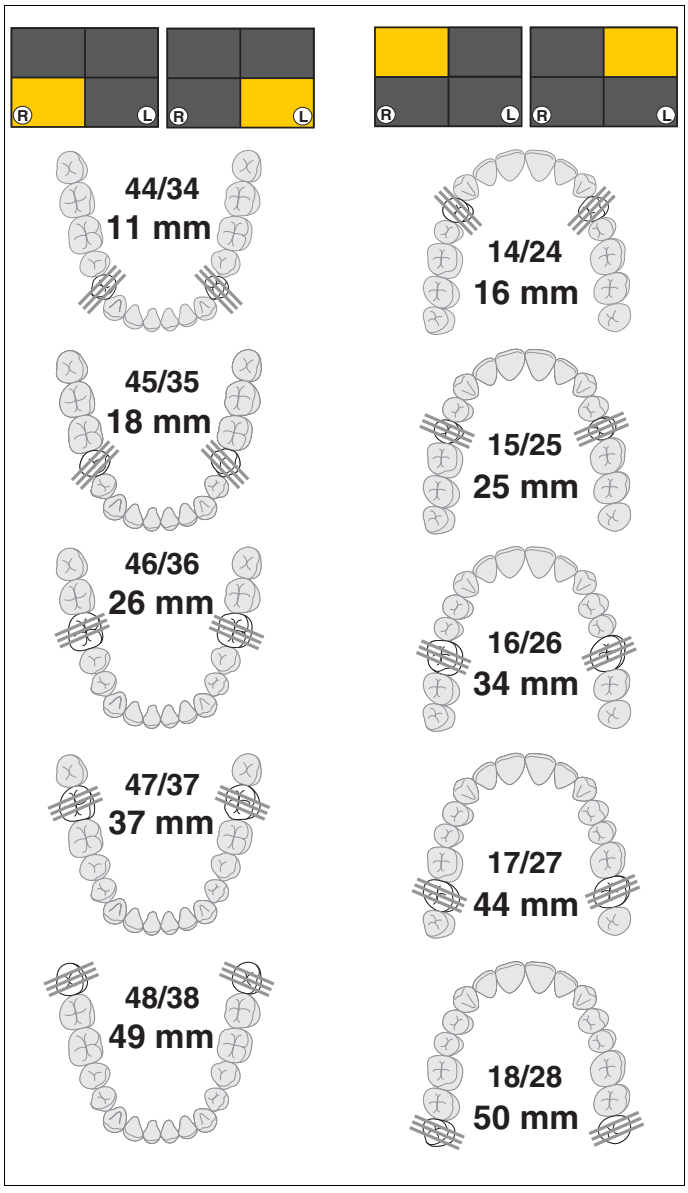
Blue mark for maxillary TSA exposures.

Green mark for maxillary TSA exposures, where the alveolar ridge of the patient's head is aligned parallel to the floor to position the patient a little lower in relation to the beam path.

Black mark (B), suitable for bite wing exposures with the TSA sensor and the longitudinal slice setting. Select the longitudinal slices for this purpose, see page 105.

ATTENTION

Do not under any case use this TSA universal bite block (black mark) for bite wing exposure programs BW1 and BW2.

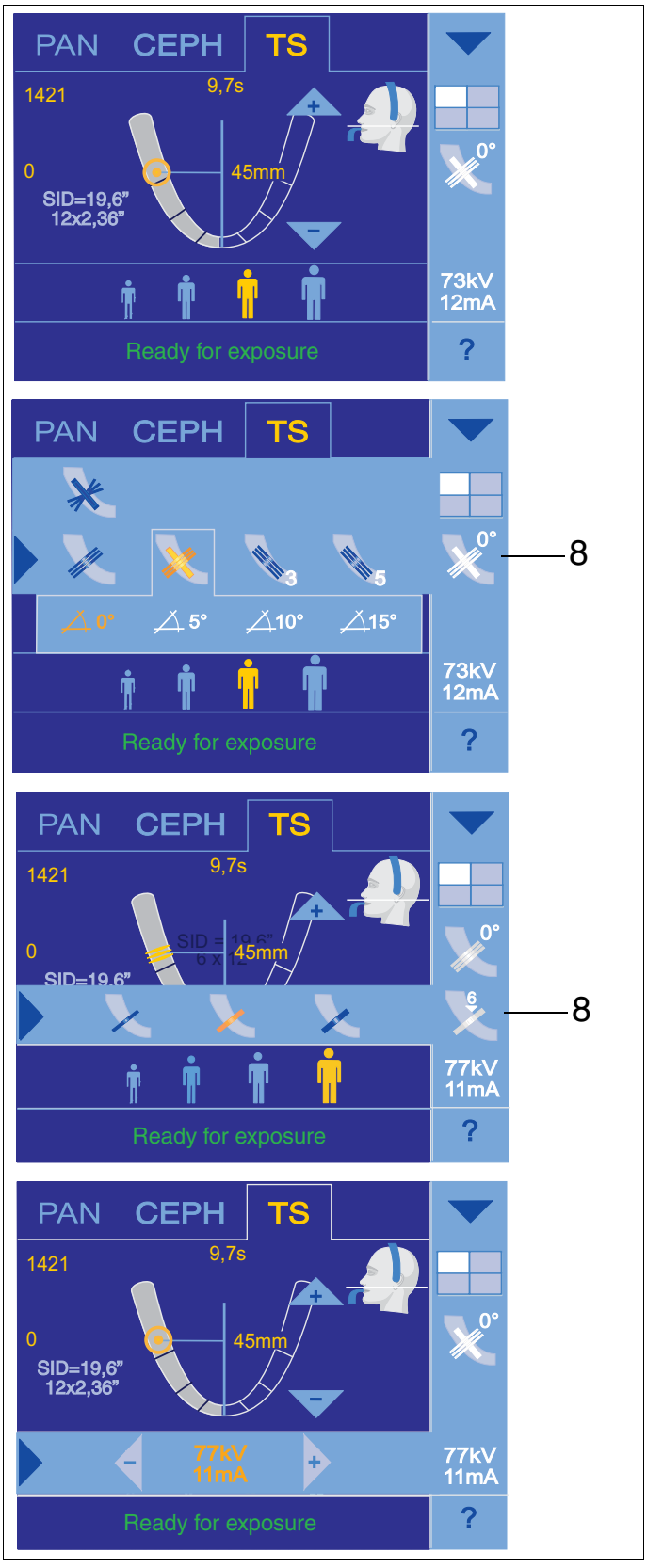


Reference values for premolar and molar region

If measurement with the TSA scale proves to be difficult or impossible, you can use the **average reference values** listed in the following table for making the settings for premolar and molar exposures.

Please not that these values may deviate substantially on patients with a small or large jaw.

11.4 Preselecting the exposure settings and releasing the exposure



Selecting the exposure parameters with the patient symbol

Touch the patient symbol that best matches the patient. The related kV/mA value appears at the right and the exposure time (in sec) appears in the top center of the touchscreen.

Changing the slice orientation preselection

When you touch this symbol in the submenu column (8), the "Slice orientations" submenu line opens. In addition to the combined TSA slice orientation with a longitudinal thick slice, you can also pre-select 4 other slice orientations here:
TSA slice orientation without longitudinal thick slice
3 longitudinal slices (LS)
5 longitudinal slices (LS)
3 crossed TSA slices with a longitudinal thick slice.
When you preselect the TSA slice with a longitudinal thick slice or the TSA slice without thick slice, an additional row with angle preselection options (0°, 5°, 10°, and 15°) will appear.

NOTE

Following the exposure, the "TSA slice orientation with a longitudinal thick slice" will be preselected as the default setting.

Changing the slice thickness only for the TSA slice orientation without longitudinal thick slice in the molar region (depth of 15 mm or more)

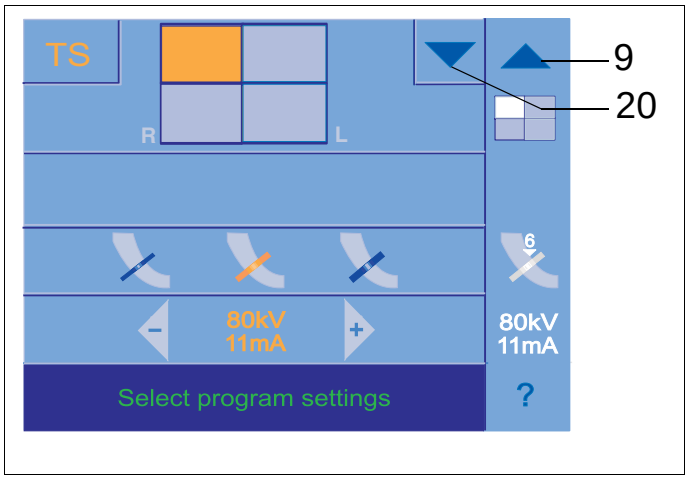
From a depth of 15 mm the submenu column displays an icon for preselecting the slice thickness.
Touching this icon will open the submenu line “slice thickness“.
The default factory setting for slice thickness is 2 mm.
You can also preselect slice thicknesses of
6 mm or 8 mm in this submenu.

Modifying the kV/mA values manually

If the default kV/mA combinations do not provide satisfactory results, you can preselect intermediate kV/mA values in this submenu using the –/+ keys in the submenu line.

The system is now ready for a TSA exposure. Release the exposure as usual.

11.5 Program settings, basic settings, startup settings



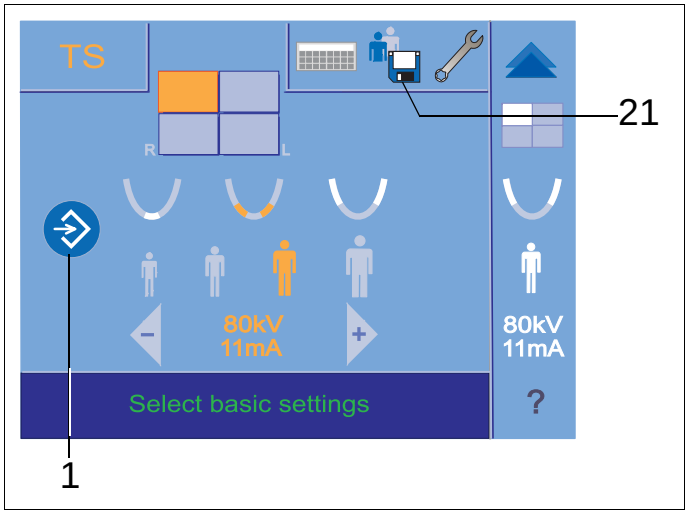
TSA program settings for the entire menu Level 2

Shown examples in the setting for TS slices

You can also display all of the program settings (except slice orientation preselection) and make the settings described above in a second program level.

To access the second program level, touch the blue arrow (9) in the upper right corner of the touchscreen; the arrow will point upward then.

After having made your selections, you can return to program level 1 only by touching the blue arrow (9) once again.



Basic settings menu Level 3

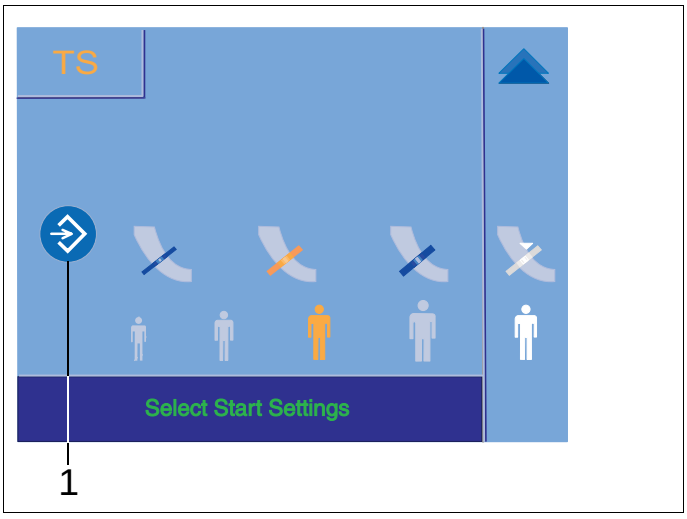
In a third program level, you can freely choose individual kV/mA values for each of the three jaw regions (anterior teeth, canines and molars) in the upper or lower jaw and for each of the 4 patient symbols. Subsequently, you can save these values by touching the programming key (1).
The programming of patient symbols can be performed only if the TSA slice orientation with a longitudinal thick slice (standard setting) or (alternatively) the TSA slice orientation is preselected first.

ATTENTION

The programming also influences all other slice orientations of this exposure type.
This means that a change of the patient symbol by one kV/mA level in the TSA slice or the TSA slice with a longitudinal thick slice automatically results in the change of the corresponding patient symbol allocation of the other slice orientations by one kV/mA level.

To access the third program level, touch the downward pointing arrow (20) in the second program level.
The right arrow will become a double arrow then.

You can close this menu again only by touching the blue double arrow in the upper right corner.
The display always returns to the standard menu (program level 1).



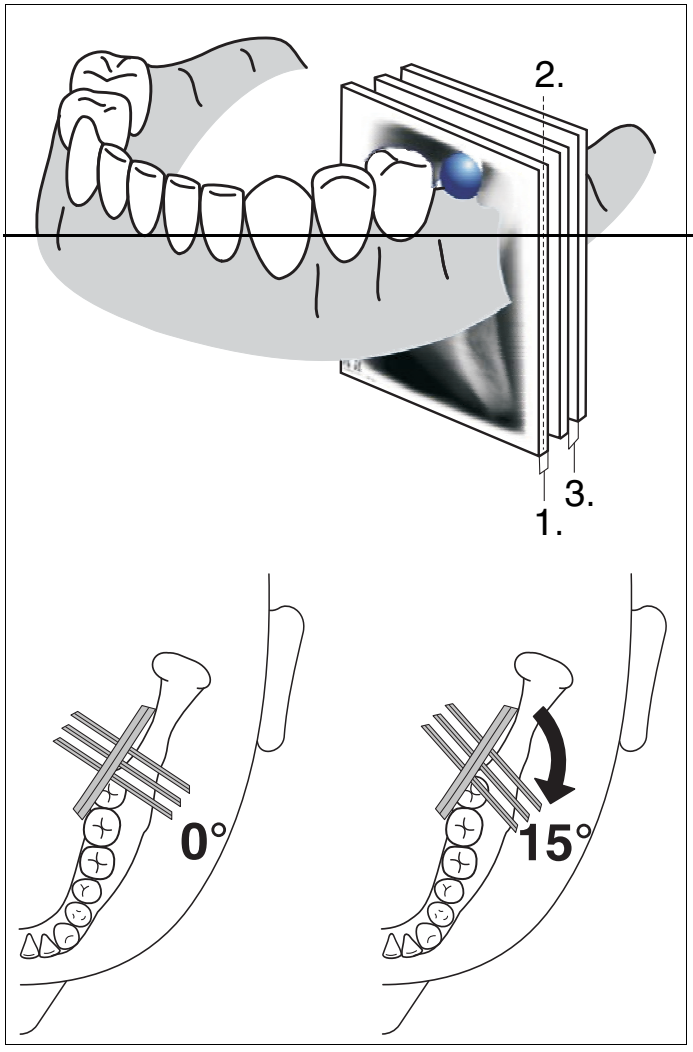
Startup settings menu
Level 4

You can access program level 3 by touching the disk icon (21) in level 4.
In level 4 you can modify any factory-programmed startup parameters.
They are then displayed after switching on the system and for each new exposure.

Here you can change the patient icon preference (2nd icon from the left, as per factory setting) and the slice thickness preference (left icon for the thinnest slice, as per factory setting).

Programming is done by touching the memory symbol (1).

11.6 TSA exposure with TSA slice orientation (alternative)



During a TSA exposure, three slice views are taken.

Slices for anterior and canine teeth are 1 mm deep, slices for the molar region are approx. 2 mm deep.
You can preset the slices for the molar region to a slice thickness of approx. 2 mm, 6 mm or 8 mm.

The slice gap is between 3 and 5 mm.

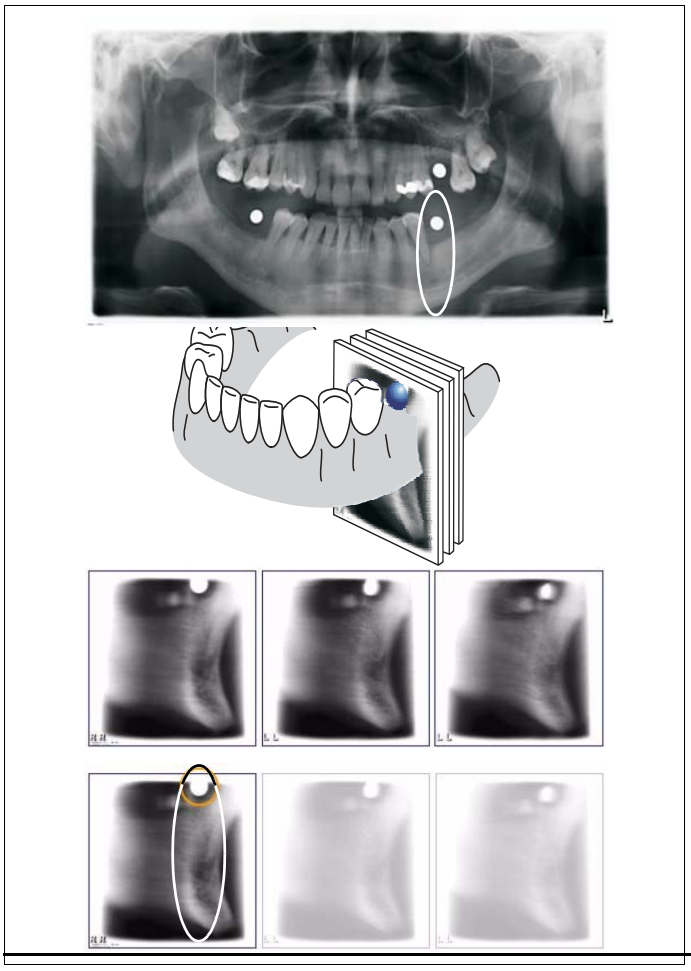
1. Slice thickness (2, 6, 8 mm selectable)
2. Slice center
3. Slice gap

Angle preselection option

If the projection of the transversal slices is not orthogonal to the path of the mandibular arch, the projection can be adjusted with the angle preselection.
The TSA slices (3 x transversal) and (3 x transversal + 1 x lateral) allow for angle preselection (0°, 5°, 10°, 15°).
The angulation takes effect from the depth measurement that applies to the molar range.

ATTENTION

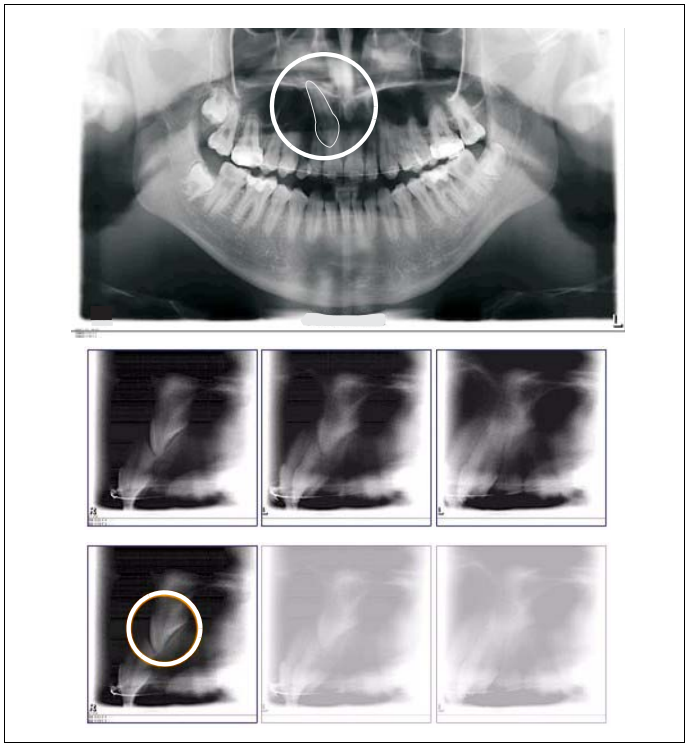
*The relationship of the angle to the slice orientation is **contra-rotatory** to that of the panoramic temporomandibular joint programs TM1 and TM2.*



Example: implant

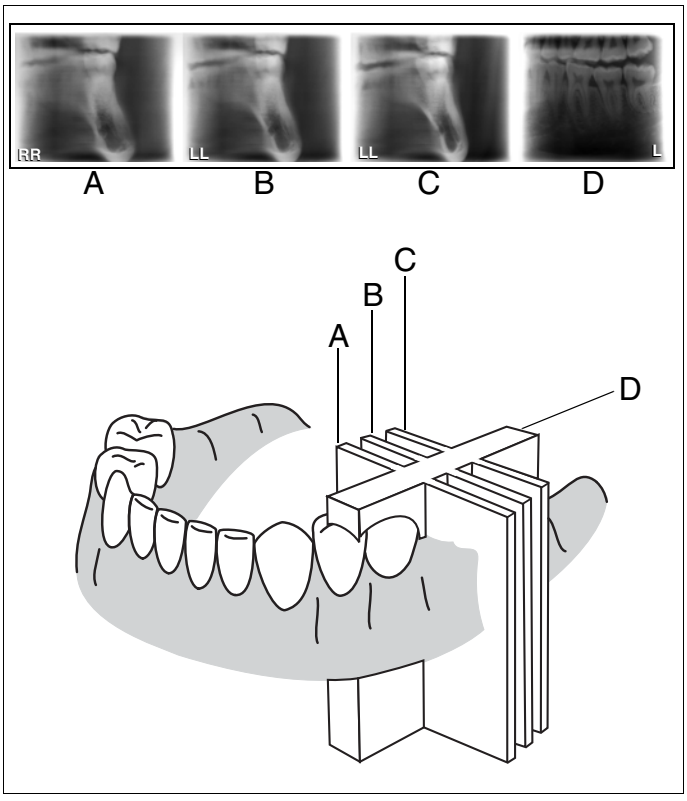
To make clear which one of the three TSA views shows which portion of the dental arch, steel balls were fitted prior to image acquisition.

The view on which the ball appears as a perfect circle marks the slice plane where the ball is positioned in the panoramic image.



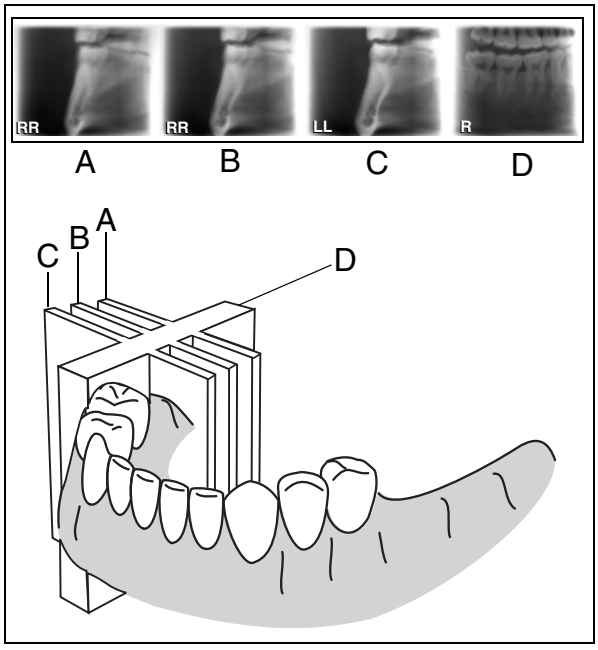
Example: displaced tooth

11.7 Slice orientations

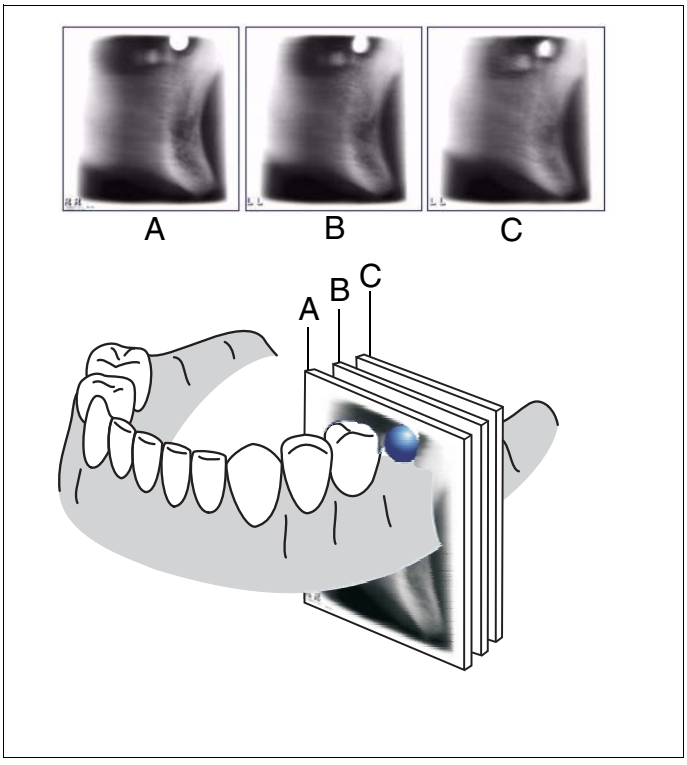


TS slices combined with a thick longitudinal slice (default)

Can be used with millimeter precision.
(Angle preselection possible)

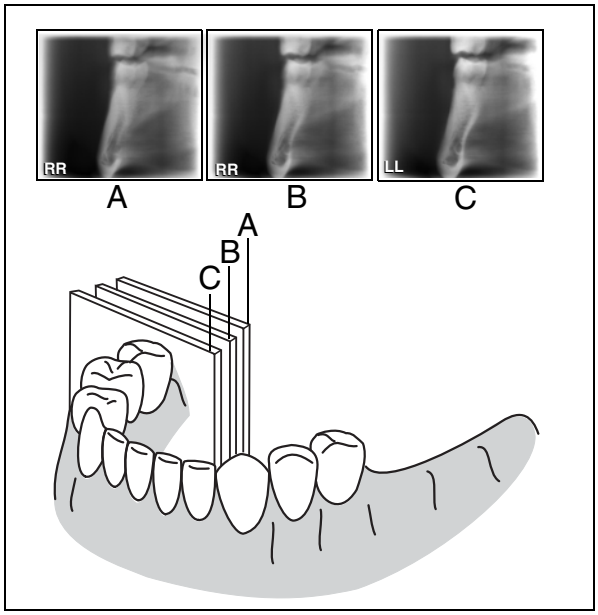


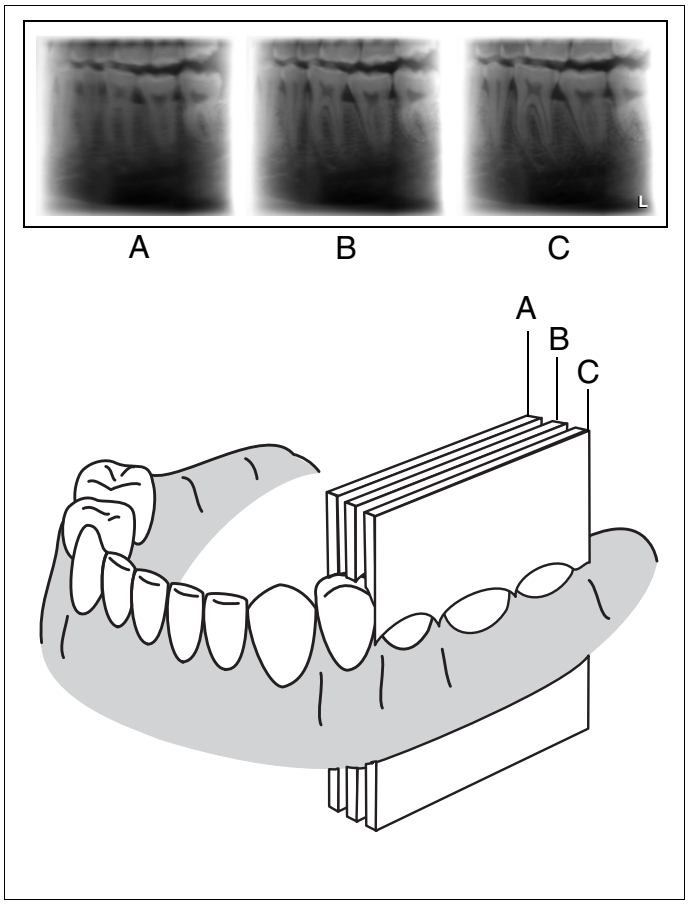
Please note that the magnifications of the partial images vary according to the technique concerned.



TS slices (alternative)

Can be used for TS slices with longitudinal thick slice with millimeter precision.
(Angle preselection possible)



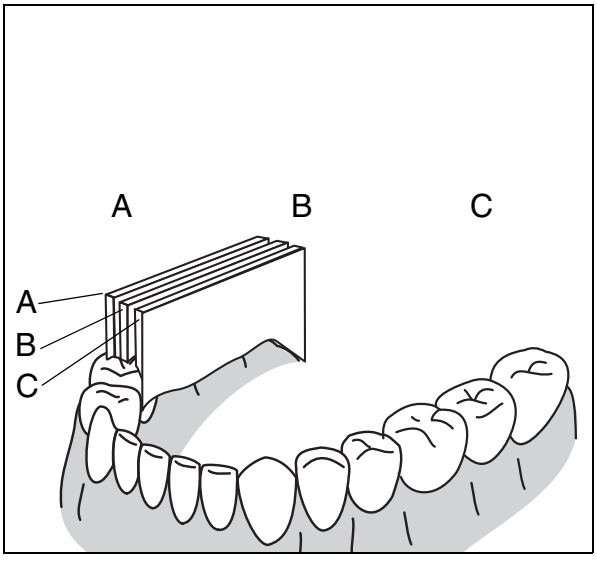


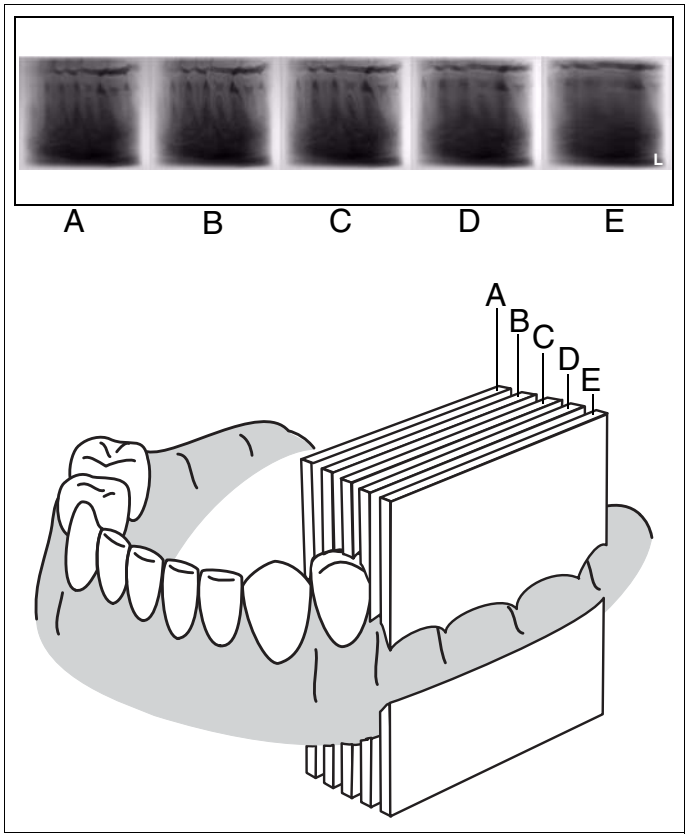
3 longitudinal slices (alternative)

Can be used as for TS slices with a thick longitudinal slice with millimeter precision.
Bite wing exposures can also be performed with the universal bite block in this setting, black mark setting.

NOTE

The partial image sequence is dependent on the selected half-side (R/L).
Make sure that the anterior tooth region (0 mm) can be displayed in two imaging versions (R/L).



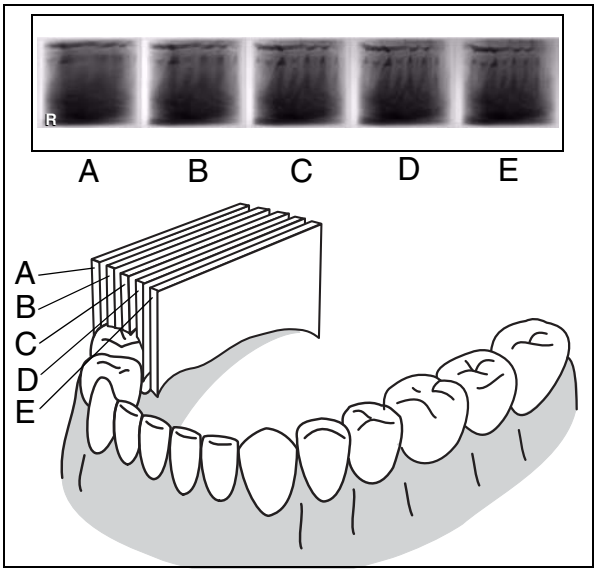


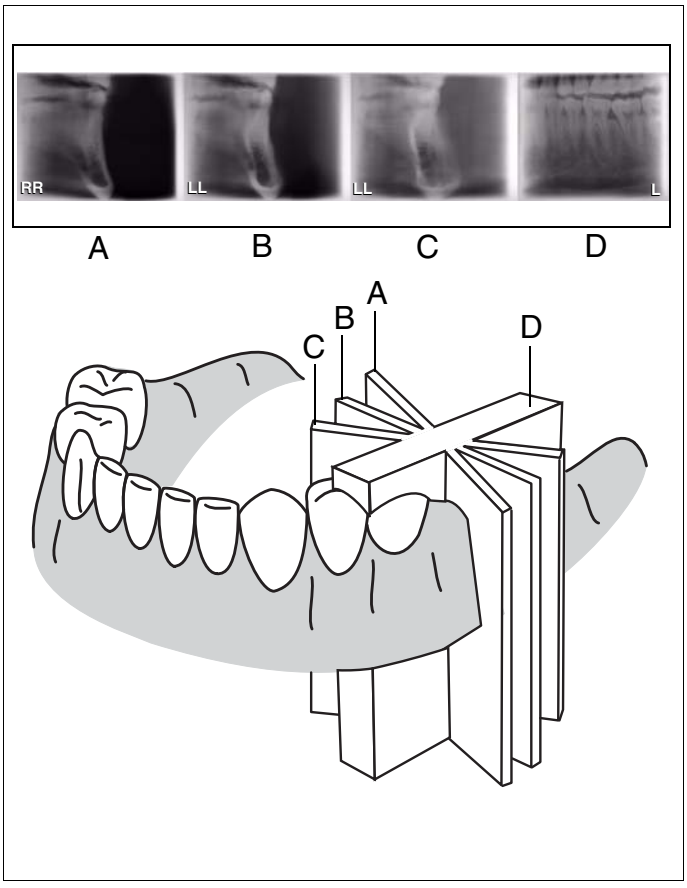
5 longitudinal slices (alternative)

Same as above, but with 5 slices.

NOTE

The partial image sequence is dependent on the selected half-side (R/L).
Make sure that the anterior tooth region (0 mm) can be displayed in two imaging versions (R/L).

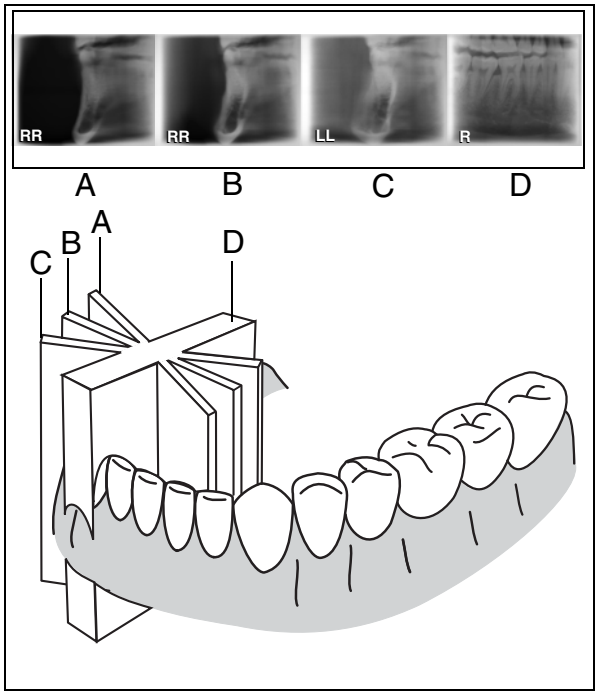




Combined TS cross-slices with a longitudinal thick slice (alternative)

Can be used for TS slices with thick longitudinal slice with millimeter precision.

Best used in the molar region.



12 Program values

12.1 Panoramic views – program values for index 2A

Index 2A
This level series is factory-programmed for the Federal Republic of Germany. It guarantees that the applicable legal regulations which must be complied with since January 1, 1999 are strictly observed. Furthermore, this level series can also be applied worldwide. National regulations must be complied with. The table lists the maximum exposure times; depending on the slice width and slice shape selected, the actual exposure time may differ slightly.

Program	Program duration approx.	Max. radiation time	Quickshot program duration approx.	Quickshot Exposure time max.	Factory-programmed values for index **2A**				Freely programmed values – please enter here –			
P1	19.0s 12.9s	14.2 s 8.0s	14.2 s 10.3s	9.1 s 5.1s	62/8	64/8	68/8	73/8				
P1A	21.8s 15.4s	14.2 s 8.0s	18.2 s 13.9s	9.1 s 5.1s	62/8	64/8	68/8	73/8				
P1C	20.1s 13.3s	14.2 s 8.0s	17.1s 12.6s	10.6s 6.0s	62/8	64/8	68/8	73/8				
P2	16.4 s 11.6s	11.6s 6.7s	12.4 s 9.4 s	7.4s 4.3s	62/8	64/8	68/8	73/8				
P2A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/8	64/8	68/8	73/8				
P2C	16.8s 11.7s	11.6s 6.7s	13.7s 9.7s	8.6s 5.0s	62/8	64/8	68/8	73/8				
P10	16.4 s 11.6s	11.6s 6.7s	11.4 s 9.4 s	7.4s 4.3s	62/8	64/8	68/8	73/8				
P10A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/8	64/8	68/8	73/8				
P10C	16.8s 11.7s	11.6s 6.7s	13.7s 9.8s	8.6s 5.0s	62/8	64/8	68/8	73/8				
P12	18.0s	4.9s			71/8	77/7	80/7	85/6				
BW1	23.0s 23.0s	8.8s 4.5s			62/8	64/8	68/8	73/8				
BW2	18.0s	5.1s			62/8	64/8	68/8	73/8				
TM1.1+TM1.2	16.1+16.1s	6.4+6.4s			68/8	71/8	73/8	77/7				
TM1A.1+TM1A.2	16.1+16.1s	6.4+6.4s			68/8	71/8	73/8	77/7				
TM2.1+TM2.2	23.6+26.9s	9.5+9.2s			68/8	71/8	73/8	77/7				
TM2A.1+TM2A.2	23.6+26.9s	9.5+9.2s			68/8	71/8	73/8	77/7				
TM3	18.4s	8.1s			66/8	68/8	71/8	73/8				
TM4	20.1s	10.1 s			68/8	71/8	73/8	77/7				
TM5	59.1s	25.0s			68/8	71/8	73/8	77/7				
TM6	63.5s	22.9 s			68/8	71/8	73/8	77/7				
S1	19.8s	14.4s			71/8	77/7	80/7	90/6				
S2	29.9s	16.2s			64/8	68/8	71/8	73/8				
S3	20.0s	8.1s			71/8	77/7	80/7	90/6				
S4	33.0s	14.1s			64/8	68/8	71/8	73/8				
MS1	57.3s	21.7s			73/8	77/7	80/7	85/6				

Table: Possible kV/mA combinations

kV	60	60	60	60	60	62	64	66	68	71	73	77	80	85	90
mA	3	5	6	7	8	8	8	8	8	8	8	7	7	6	6

12.2 Panoramic views – program values for index 4A

Index 4A

Index 4A, which specifies a reduced level series for children and adolescents, must be observed as a minimum requirement in all new installations and systems moved from one location to another in the Federal Republic of Germany since January 1, 1999. Furthermore, this level series can also be applied worldwide. National regulations must be complied with. The table lists the maximum exposure times; depending on the slice width and slice shape selected, the actual exposure time may differ slightly.

Program	Program duration approx.	Max. radiation time	Quickshot program duration approx.	Quickshot Exposure time max.	Factory-programmed values for index **4A**				Freely programmed values – please enter here –			
P1	19.0s 12.9s	14.2 s 8.0s	14.2 s 10.3s	9.1 s 5.1s	62/8	64/8	69/15	73/15				
P1A	21.8s 15.4s	14.2 s 8.0s	18.2 s 13.9s	9.1 s 5.1s	62/8	64/8	69/15	73/15				
P1C	20.1s 13.3s	14.2 s 8.0s	17.1s 12.6s	10.6s 6.0s	62/8	64/8	69/15	73/15				
P2	16.4 s 11.6s	11.6s 6.7s	12.4 s 9.4 s	7.4s 4.3s	62/8	64/8	69/15	73/15				
P2A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/8	64/8	69/15	73/15				
P2C	16.8s 11.7s	11.6s 6.7s	13.7s 9.7s	8.6s 5.0s	62/8	64/8	69/15	73/15				
P10	16.4 s 11.6s	11.6s 6.7s	11.4 s 9.4 s	7.4s 4.3s	62/8	64/8	69/15	73/15				
P10A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/8	64/8	69/15	73/15				
P10C	16.8s 11.7s	11.6s 6.7s	13.7s 9.8s	8.6s 5.0s	62/8	64/8	69/15	73/15				
P12	18.0s	4.9s			71/8	77/7	80/14	84/13				
BW1	23.0s 23.0s	8.8s 4.5s			62/8	64/8	69/15	73/15				
BW2	18.0s	5.1s			62/8	64/8	69/15	73/15				
TM1.1+TM1.2	16.1+16.1s	6.4+6.4s			68/8	71/8	73/15	77/14				
M1A.1+TM1A.2	16.1+16.1s	6.4+6.4s			68/8	71/8	73/15	77/14				
TM2.1+TM2.2	23.6+26.9s	9.5+9.2s			68/8	71/8	73/15	77/14				
TM2A.1+TM2A.2	23.6+26.9s	9.5+9.2s			68/8	71/8	73/15	77/14				
TM3	18.4s	8.1s			66/8	68/8	71/15	73/15				
TM4	20.1s	10.1 s			68/8	71/8	73/15	77/14				
TM5	59.1s	25.0s			68/8	71/8	73/15	77/14				
TM6	63.5s	22.9 s			68/8	71/8	73/15	77/14				
S1	19.8s	14.4s			71/8	77/7	80/14	90/12				
S2	29.9s	16.2s			64/8	68/8	71/15	73/15				
S3	20.0s	8.1s			71/8	77/7	80/14	90/12				
S4	33.0s	14.1s			64/8	68/8	71/15	73/15				
MS1	57.3s	21.7s			73/8	77/7	80/14	84/13				

Table: Possible kV/mA combinations with preselected patient symbols 1 and 2

	kV	60	60	60	60	60	62	64	66	68	71	73	77	80	85	90
	mA	3	5	6	7	8	8	8	8	8	8	8	7	7	6	6

Table: Possible kV/mA combinations with preselected patient symbols 3 and 4

	kV	60	60	60	60	60	62	64	66	69	71	73	77	80	84	90
	mA	9	10	12	14	16	16	16	16	15	15	15	14	14	13	12

12.3 Panoramic views - program values for index 1A

Index 1A
This level series is no longer permissible in the Federal Republic of Germany since January 1, 1999.
The table lists the maximum exposure times; depending on the slice width and slice shape selected, the actual exposure time may differ slightly.

Program	Program duration approx.	Radiation time max.	Quickshot program duration approx.	Quickshot Exposure time max.	Factory-programmed values for index **1A**				Freely programmed values – please enter here –			
P1	19.0s 12.9s	14.2 s 8.0s	14.2 s 10.3s	9.1 s 5.1s	62/16	64/16	69/15	73/15				
P1A	21.8s 15.4s	14.2 s 8.0s	18.2 s 13.9s	9.1 s 5.1s	62/16	64/16	69/15	73/15				
P1C	20.1s 13.3s	14.2 s 8.0s	17.1s 12.6s	10.6s 6.0s	62/16	64/16	69/15	73/15				
P2	16.4 s 11.6s	11.6s 6.7s	12.4 s 9.4 s	7.4s 4.3s	62/16	64/16	69/15	73/15				
P2A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/16	64/16	69/15	73/15				
P2C	16.8s 11.7s	11.6s 6.7s	13.7s 9.7s	8.6s 5.0s	62/16	64/16	69/15	73/15				
P10	16.4 s 11.6s	11.6s 6.7s	11.4 s 9.4 s	7.4s 4.3s	62/16	64/16	69/15	73/15				
P10A	18.0s 12.1s	11.6s 6.7s	15.0s 11.8s	7.4s 4.3s	62/16	64/16	69/15	73/15				
P10C	16.8s 11.7s	11.6s 6.7s	13.7s 9.8s	8.6s 5.0s	62/16	64/16	69/15	73/15				
P12	18.0s	4.9s			71/15	77/14	80/14	84/13				
BW1	23.0s 23.0s	8.8s 4.5s			62/16	64/16	69/15	73/15				
BW2	18.0s	5.1s			62/16	64/16	69/15	73/15				
TM1.1+TM1.2	16.1+16.1s	6.4+6.4s			69/15	71/15	73/15	77/14				
M1A.1+TM1A.2	16.1+16.1s	6.4+6.4s			69/15	71/15	73/15	77/14				
TM2.1+TM2.2	23.6+26.9s	9.5+9.2s			69/15	71/15	73/15	77/14				
TM2A.1+TM2A.2	23.6+26.9s	9.5+9.2s			69/15	71/15	73/15	77/14				
TM3	18.4s	8.1s			66/16	69/15	71/15	73/15				
TM4	20.1s	10.1 s			69/15	71/15	73/15	77/14				
TM5	59.1s	25.0s			69/15	71/15	73/15	77/14				
TM6	63.5s	22.9 s			69/15	71/15	73/15	77/14				
S1	19.8s	14.4s			71/15	77/14	80/14	90/12				
S2	29.9s	16.2s			64/16	69/15	71/15	73/15				
S3	20.0s	8.1s			71/15	77/14	80/14	90/12				
S4	33.0s	14.1s			64/16	69/15	71/15	73/15				
MS1	57.3s	21.7s			73/15	77/14	80/14	84/13				

Table: Possible kV/mA combinations

kV	60	60	60	60	60	62	64	66	69	71	73	77	80	84	90
mA	9	10	12	14	16	16	16	16	15	15	15	14	14	13	12

12.4 Program values for cephalometric exposures

The maximum radiation time is 14.9 s; it may be shortened to 7.5 s by selecting the "Quickshot" function.

Table: Cephalometric exposures

Program	Max. radiation time	Quickshot Max. exposure time	Factory-programmed values				Freely programmed values – please enter here –			
C1	9.1 s	6.1s	80/14	80/14	84/13	90/12				
C2	9.1 s	6.1s	80/14	80/14	84/13	90/12				
C3	9.4 s	4.7s	73/15	73/15	77/14	84/13				
C3 F	14.9s	7.5s	73/15	73/15	77/14	84/13				
C4	9.1 s	4.6s	64/16	64/16	64/16	64/16				

Table: Possible kV/mA combinations

kV	60	60	60	60	60	62	64	66	69	71	73	77	80	84	90
mA	9	10	12	14	16	16	16	16	15	15	15	14	14	13	12

12.5 TSA exposure values

The maximum program duration time for TSA exposures is 60 s.

Table: TS slices combined with a thick longitudinal slice

Tooth region	Depth (TSA scale)	Max. radiation time	kV/ mA series	Factory-programmed values				Freely programmed values – please enter here –			
Mandibular anterior teeth	0 – 5 mm	10 s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Maxillary anterior teeth	0 – 5 mm	10 s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Mandibular canines	6 – 14 mm	10 s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Maxillary canines	6 – 14 mm	10 s	B	61/9 *	62/10 *	64/10 *	64/10 *				
Mandibular premolars	15 – 35 mm	12.3s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Maxillary premolars	15 – 35 mm	12.3s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Mandibular molars	36 – 65 mm	13 s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Maxillary molars	36 – 65 mm	13 s	C	68/12 **	71/12 **	73/12 **	77/11 **				

For the levels marked with "*", a kV increase is performed in percent in the longitudinally oriented partial image, see level series A and B.

For the levels marked with "**", a kV decrease is performed in percent in the longitudinally oriented partial image, see level series C.

Table: TS slices

Tooth region	Depth (TSA scale)	Max radiation time	kV/ mA series	Factory-programmed values				Freely programmed values – please enter here –			
Mandibular anterior teeth	0 – 5 mm	6.7s	A	60/8	62/8	64/8	64/8				
Maxillary anterior teeth	0 – 5 mm	6.7s	A	60/8	62/8	64/8	64/8				
Mandibular canines	6 – 14 mm	6.7s	A	60/8	62/8	64/8	64/8				
Maxillary canines	6 – 14 mm	6.7s	B	61/9	62/10	64/10	64/10				
Mandibular premolars	15 – 35 mm	9 s	C	68/12	71/12	73/12	77/11				
Maxillary premolars	15 – 35 mm	9 s	C	68/12	71/12	73/12	77/11				
Mandibular molars	36 – 65 mm	9.7s	C	68/12	71/12	73/12	77/11				
Maxillary molars	36 – 65 mm	9.7s	C	68/12	71/12	73/12	77/11				

Table: 3 longitudinal slices

Tooth region	Depth (TSA scale)	Max radiation time	kV/ mA series	Factory-programmed values				Freely programmed values – please enter here –			
Mandibular anterior	0 – 5 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Maxillary anterior teeth	0 – 5 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Mandibular canines	6 – 14 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Maxillary canines	6 – 14 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Mandibular premolars	15 – 35 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Maxillary premolars	15 – 35 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Mandibular molars	36 – 65 mm	8.2 s	C	68/12	71/12	73/12	77/11				
Maxillary molars	36 – 65 mm	8.2 s	C	68/12	71/12	73/12	77/11				

Table: 5 longitudinal slices

Tooth region	Depth (TSA scale)	Max radiation time	kV/ mA series	Factory-programmed values				Freely programmed values – please enter here –			
Mandibular anterior	0 – 5 mm	13.6s	C	68/12	71/12	73/12	77/11				
Maxillary anterior teeth	0 – 5 mm	13.6s	C	68/12	71/12	73/12	77/11				
Mandibular canines	6 – 14 mm	13.6s	C	68/12	71/12	73/12	77/11				
Maxillary canines	6 – 14 mm	13.6s	C	68/12	71/12	73/12	77/11				
Mandibular premolars	15 – 35 mm	13.6s	C	68/12	71/12	73/12	77/11				
Maxillary premolars	15 – 35 mm	13.6s	C	68/12	71/12	73/12	77/11				
Mandibular molars	36 – 65 mm	13.6s	C	68/12	71/12	73/12	77/11				
Maxillary molars	36 – 65 mm	13.6s	C	68/12	71/12	73/12	77/11				

Table: TS transaxial slices with a longitudinal thick slice

Tooth region	Depth (TSA scale)	Max. radiation time	kV/ mA series	Factory-programmed values				Freely programmed values – please enter here –			
Mandibular anterior teeth	0 – 5 mm	10.5s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Maxillary anterior teeth	0 – 5 mm	10.5s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Mandibular canines	6 – 14 mm	10.0s	A	60/8 *	62/8 *	64/8 *	64/8 *				
Maxillary canines	6 – 14 mm	10.0s	B	61/9 *	62/10 *	64/10 *	64/10 *				
Mandibular premolars	15 – 35 mm	12.3s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Maxillary premolars	15 – 35 mm	12.3s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Mandibular molars	36 – 65 mm	13.0s	C	68/12 **	71/12 **	73/12 **	77/11 **				
Maxillary molars	36 – 65 mm	13.0s	C	68/12 **	71/12 **	73/12 **	77/11 **				

Table: Possible kV/mA combinations for lower/upper anterior teeth and lower canines

Series **A**	**kV**	60	60	60	60	60	62	64	66	68	71	73	77	80	85	90
	mA	3	5	6	7	8	8	8	8	8	8	8	7	7	6	6
	kV increase in % *	17	17	17	17	17	16	15	14	13	12	11	10	10	5	0

Table: Possible kV/mA combinations for upper canines

Series **B**	**kV**	60	60	61	61	61	62	64	66	68	70	73	76	80	83	90
	mA	6	7	7	8	9	10	10	10	10	10	9	9	9	9	8
	kV increase in % *	17	17	17	17	17	16	15	14	13	12	11	10	10	7	0

Table: Possible kV/mA combinations for lower/upper molars

Series **C**	**kV**	60	60	60	60	60	62	64	66	68	71	73	77	80	83	90
	mA	7	8	9	10	12	12	12	12	12	12	12	11	11	11	10
	kV decrease % **	0	0	0	0	0	0	-3	-6	-9	-10	-10	-11	-11	-11	-11

* = kV increase in percent for partial image of longitudinal thick slice in the combined TS slice.

** = kV decrease in percent for partial image of longitudinal thick slice in the combined TS slice.

13 List of messages

13.1 List of help messages

A number of H3 help messages may appear on the Easypad while you attempt to release an exposure:

- Press the **exposure release button**. **ATTENTION Observe radiation protection measures**.
  The message **H3/H4 ...** – Message appears on the Easypad.
- See list below about how to proceed to make the system ready for exposure.

Help message	Actions required	Description
H3 01	R button, move into starting position.	The rotating element is not in the starting position.
H3 20	R button, confirm exposure data.	The exposure data have not been acknowledged yet.
H3 21	Close the door	Check door contact of the X-ray room.
H3 22	Select quadrant	Select the desired quadrant.
H4 01	Plug sensor into PAN slot.	The sensor is not in the appropriate slot for the selected exposure type.
H4 02	Plug sensor into Ceph slot.	The sensor is not in the appropriate slot for the selected exposure type.
H4 03	Switch SIDEXIS to ready for exposure state	SIDEXIS is not ready for exposure.
H4 04	Plug in Ceph sensor	The sensor does not match the selected exposure type
H4 05	Plug in TSA sensor	The sensor does not match the selected exposure type
H4 06	R button, move into Ceph starting position.	Ceph is not in the starting position
H4 20	Call up existing exposure.	The image could not be transferred to SIDEXIS. See SIDEXIS Operator's Manual. **ATTENTION** Do not switch off the system until the help message has disappeared.

The above measures clear those help messages that result from operator errors.
If it is not possible to clear the help message by taking the appropriate measure, another type of error is the cause.
To locate the error, proceed as described on the following pages.

13.2 Error message structure

The error messages are displayed in the form of an error code. They are not provided in plain-text form.

13.2.1 The error message code has the following structure:

Ex yy zz

Ex	Error type/"troubleshooting" classification for the user
yy	Location; module; subsystem or logical function unit
zz	Consecutive number with error ID

All error messages of the system are grouped according to these criteria.

13.2.2 Ex

Digit (x) is intended to provide the user with quick help in deciding how to deal with this error.

Ex	Description	Actions required	Error group
1	System warning; system message	Acknowledge the error message. Contact your Customer Service. Continued operation of the system is ensured.	This error group includes all errors that indicate still acceptable tolerance variations, or messages about states which do not directly affect system operation.
2	Errors caused by system overload	Acknowledge the error message. Repeat the procedure step after a certain waiting time. If the error message reappears, prolong the waiting time. If the error state persists, contact your Customer Service.	This error group includes states that indicate, for example, temporary excess temperatures or the like. The cause of the error disappears automatically after a certain waiting time.
3	The system detects that a key was pressed during power-on.	Switch the system off and back on; if the error reoccurs without any user intervention, contact your Customer Service. **CAUTION!** After switching the unit off with the main switch, you must wait for approx. 2 minutes before switching it back on.	This error group includes all errors that indicate invalid signal states of keys and safety signals during power-on.
4	Malfunction or mechanical obstruction of unit movements	Acknowledge the error message; make sure that the movements of the unit are not obstructed. Repeat the last procedure step or exposure. If the error reoccurs without any identifiable cause -> contact your Customer Service	This error group includes all errors that indicate problems with the motor-controlled movements on the outside of the unit.

Ex	Description	Actions required	Error group
5	Malfunction during the exposure or during exposure preparation.	Acknowledge the error message to continue system operation. Repeat the last procedure step or exposure. If the error reoccurs -> contact your Customer Service.	This error group includes all errors resulting from a certain system action triggered by the user which could not be performed because a required (internal) partial function (SW or HW) is not ready or fails
6	Error during system self-test.	Acknowledge the error message to continue system operation. If the error occurs repeatedly, switch the system off and back on; if the error reoccurs -> contact your Customer Service.	This error group includes all errors which may occur spontaneously and without any related operator action. They may be caused by system self-tests.
7	Unrecoverable system error.	Switch off the system; immediately contact your Customer Service.	This error group includes all errors which may occur spontaneously and without any related operator action. They may be caused by system self-tests. In this case it is absolutely certain that continued system operation is not possible.

13.2.3 yy

Digits (yy) define the location or logical function unit where the error has occurred.

10	Central control DX 11; system hardware
11	Central control DX 11; system software
12	Central control DX 11; central CAN bus errors
13	Central control DX 11; DX11, DX1 periphery (motor system of stand, sensor system of stand)
14	Central control DX 11; digital extension (HSI, network...)
15	Central control DX 11; configuration (wrong software, wrong module constellation, etc.)
06	X-ray tube assembly
07	User interface (Comfort version/Easypad)
91	Ceph digital
81	Sensor
41	Media interface card
42	Remote
61	Diaphragm control

The location may be a DX module number standing for an entire HW function unit or a logical SW function unit on the DX11 (central control).

13.2.4 zz

Digits (zz) show a consecutive number with the error ID.

14 Care of outer surfaces

Cleaning

Remove dirt, grime and disinfectant residue regularly using mild, commercially available cleaning agents.

Do not allow liquids to penetrate into the ventilation slots!

Immediately wipe off medications that come into contact with the surface.

Disinfecting

Surfaces can be wiped with surface disinfectants. Observe manufacturer's instructions regarding restrictions for use!

ATTENTION
Use only disinfecting, cleaning and care agents which are approved by Sirona!

A continuously updated list of approved agents can be downloaded from the Internet at: **www.sirona.de / SERVICE / Downloads / Care & cleaning agents**

If you do not have Internet access, you can use one of the following two ways to order the list:

- Order from your local dental depot
- Order from Sirona
  Phone:++49 (0) 62 51-16-16 16
  Fax: ++49 (0) 62 51-16-18 18
  REF 59 70 905

Only the external surfaces may be disinfected with approved chemical disinfectants. Use only disinfectants that comply with the valid requirements of the respective national regulatory body or whose bactericidal, fungicidal and virucidal properties have been verifiably tested and approved accordingly.

You can use for instance:
MinutenSpray classic or **MinutenWipes** by Alpro,
PlastiSept by Alpro or
FD 333, FD 312 by Dürr.

In the USA and Canada:
CAVICIDE‚ or **CAVIWIPES**‰

Do not use: Substances containing phenol, peracetic acid, peroxide or any other oxygen-splitting agents, sodium hypochlorite or iodine-splitting agents.

15 Inspection and maintenance

Inspection and preventive maintenance must be performed at scheduled intervals to protect the health and safety of patients, users and other persons.

15.1 Annual check performed by the system owner or other authorized persons

In order to ensure the operational safety and functional reliability of your product, you as the system owner should check the equipment at regular intervals (at least once a year) or commission your dental depot to do so.

15.2 Maintenance by the service engineer

In addition to the annual check to be carried out by the system owner or authorized persons, preventive maintenance must be performed after 4, 7 and 10 years, and then at two-year intervals.

15.3 Image quality check

The image quality should be assessed by the system owner at regular intervals, at least once a year.

On digital image receptor systems, the degree of postprocessing (brightness or contrast adjustment) that is required in the image processing software (e.g. SIDEXIS) to produce satisfactory results is used as an assessment criterion.

If, after taking into account the patient's anatomy and excluding possible sources of error such as incorrect patient positioning, this criterion can be regarded as given, you should immediately contact your Customer Service to have possible system faults rectified.

Observe any possible additional country-specific requirements.

16 Disposal

Your product is marked with the adjacent symbol. Disposal of your product with domestic refuse is not compatible with the objectives of environmentally sound recycling/disposal.
The black bar underneath the "garbage can" symbol means that it was put into circulation after Aug. 13, 2005. (see EN 50419:2005).

Please observe the disposal regulations applicable in your country.

We advise that this product is subject to the stipulations in the EC guideline 2002/96 governing waste electrical and electronic equipment and must be disposed of in line with the these special requirements within the European Union (EU).

Prior to disassembly/disposal of the product, it must be fully prepared (cleaned/disinfected/sterilized).

NOTE

The X-ray tube assembly of this product contains a tube with a potential implosion hazard, a small amount of beryllium, a lead lining and mineral oil.
The unit contains counterbalancing weights made of lead.

When disposing of equipment permanently, please proceed as follows:

In Germany:

To initiate return of the electrical device, please send a disposal request to "enretec GmbH".

You can find a form for placing a disposal order on the company's homepage at www.enretec.de under the menu item "Entsorgung elektrischer und elektronischer Geräte" (Disposal of electric and electronic devices). The form can either be downloaded or filled out online.

Fill out the form with the corresponding details and send it either as an online order or fax it to enretec GmbH at +49(0)3304 3919 590.
You can also get in touch with the following contacts for disposal orders and any questions relating to this you may have:
Telephone: +49(0)3304 3919 500;
By e-mail: pickup@eomRECYCLING.com
Mailing address: enretec GmbH, Geschäftsbereich eomRECYCLING
Kanalstraße 17, 16727 Velten

Any fixed installation equipment will be collected from its installation location in the practice, while loose equipment will be collected at the street curb at your address at the agreed time and date.

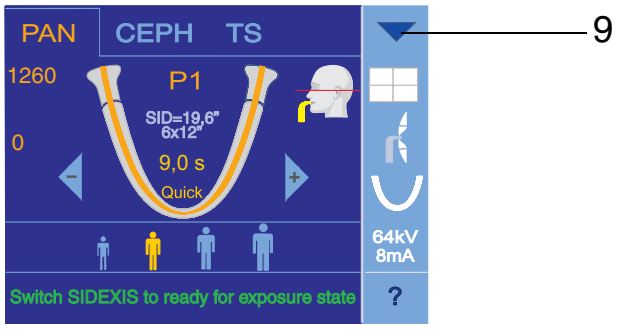
All disassembly, transport and packaging costs are to be borne by the owner/operator of the equipment. The disposal itself is free of charge.

Worldwide (outside Germany):

Please contact your local dental equipment specialist for country-specific information on disposal.

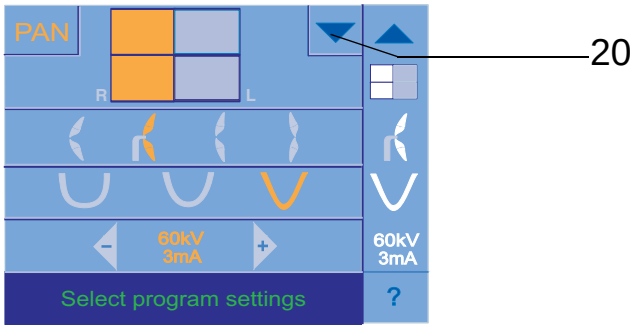
17 Activating functions

17.1 Via the Easypad touchscreen

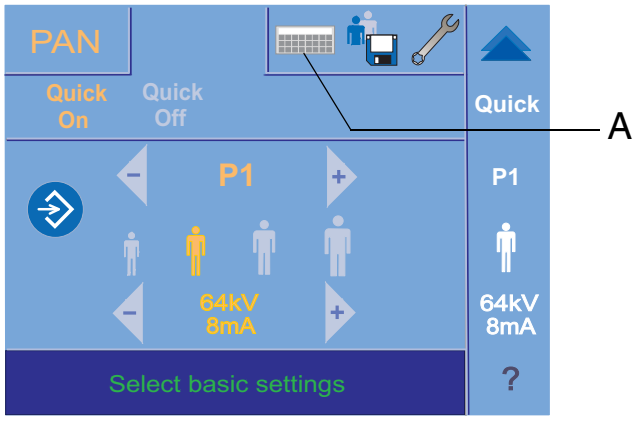


If you have purchased a certificate with a corresponding activation key code, you can extend the functionality of your ORTHOPHOS XG^{Plus} system.

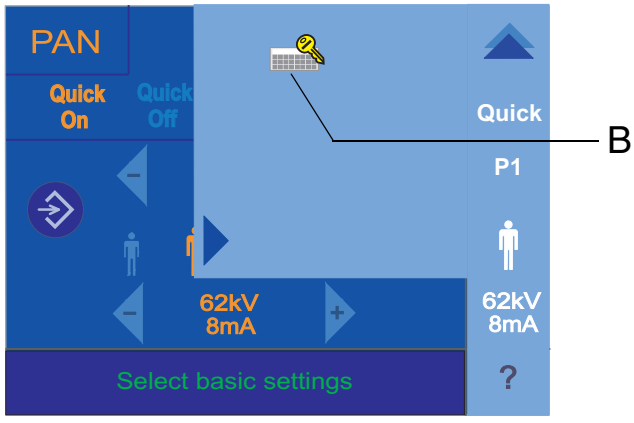
To do so, touch the downward pointing arrow (9) in the upper right corner of the selection screen.



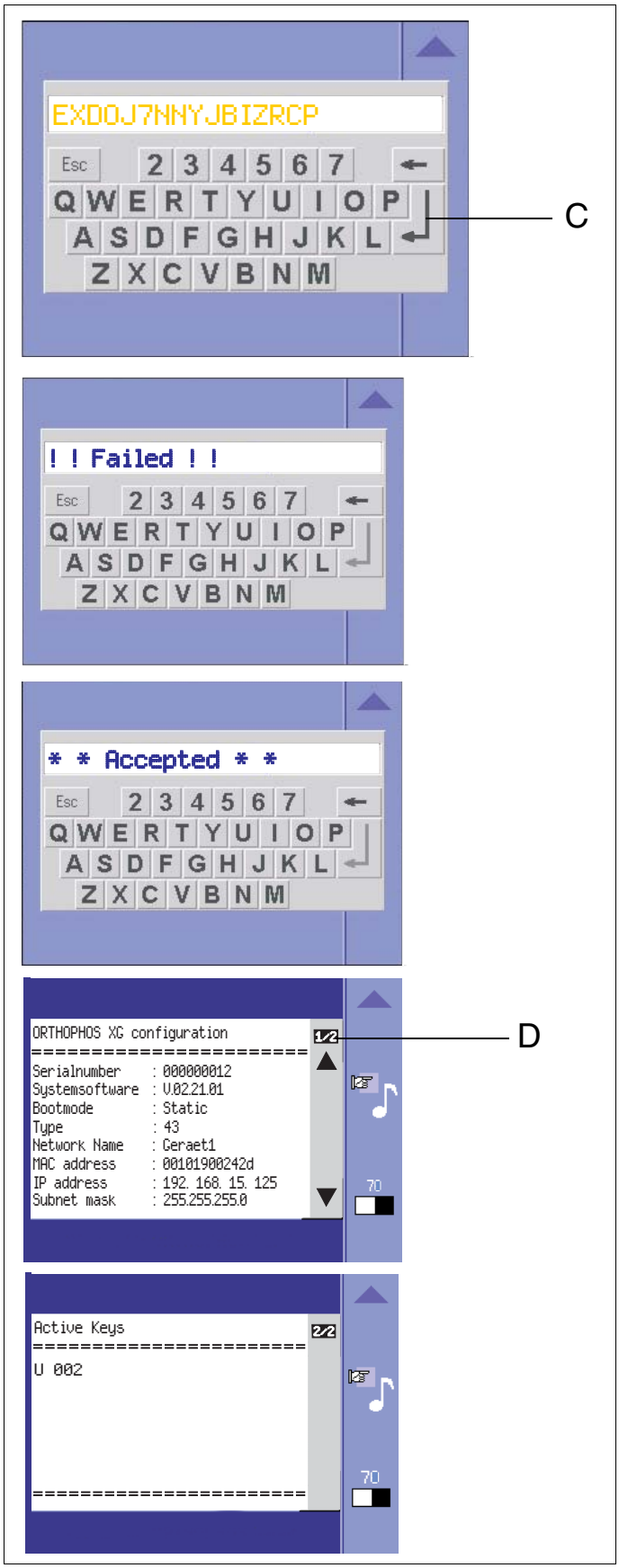
This brings you to the second program level (program settings). In the second program level, touch the downward pointing arrow (20).



This brings you to the third program level (basic settings). In the third program level, touch the keypad symbol (A).



A field with a keypad symbol and a key (B) opens. Touch this symbol.



A keypad appears on the touchscreen.

Enter the activation key code that figures on your certificate by touching the corresponding letters and numbers on the keypad. The code appears in the white line above the keypad.
The letter/number combination has always 16 digits. After you have entered the last character, the color of the Enter key arrow (C) changes from gray to black.

Confirm your input with the Enter key (C).

If the data you entered are not correct the white line will display alternately **! ! Failed ! !** and the incorrect **activation key code**.

If you have entered a correct code, the message *** * Accepted * *** appears, telling you that the extended functions have been successfully activated.

Checking the extended functions

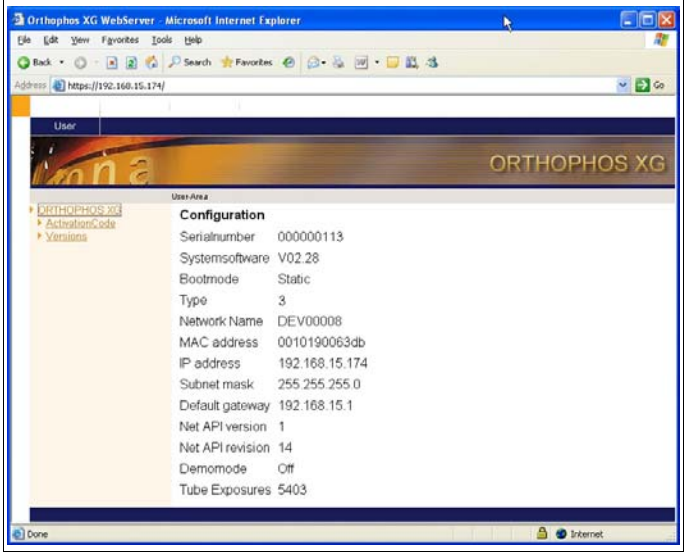
Touch the question mark in level 2 or 3 to display the info screen (chapter 3.2 “Info screen”).
The page number and the overall number of pages are displayed in a small black field (D) in the upper right corner.

Press this field to scroll through the pages until the “Active Keys” page appears.

The name of the function extension is displayed here.

17.2 Via web browser on the PC

Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate is from a trusted certifying authority.
The security certificate date is valid.
The name on the security certificate is invalid or does not match the name of the site
Do you want to proceed?
Yes
No
View Certificate



The following procedure is described based on the example of **Microsoft Internet Explorers** under **Windows XP**.

As an alternative to entering the activation code via the Easypad touchscreen, you can also enter it via a web browser.

It is not necessary to switch on the ORTHOPHOS XG for this purpose.

Enter the **IP address** of your ORTHOPHOS XG in the Internet browser of your practice computer.

"https://XXX.XXX.XX.XXX"

You can read the IP address, e.g. by calling up the info screen on the touchscreen of the ORTHOPHOS XG.

Each time the ORTHOPHOS XG web pages are called up, the adjacent dialog box will be displayed before the actual web page appears.
This dialog box must be confirmed with "**Yes**".

NOTE

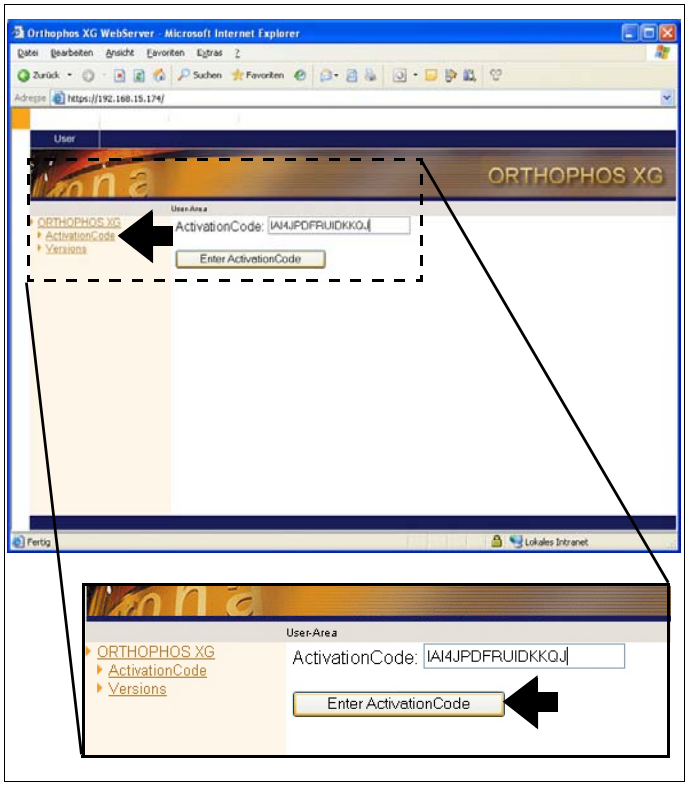
Following the initial contact, a certificate check (operating system function) is required (see attachment).

The ORTHOPHOS XG web page is then displayed in your web browser.

The screen initially displays the **configuration** of your ORTHOPHOS XG.
All of the system data which might be useful when contacting your service technician are listed here.

Useful tip:

You can bookmark the ORTHOPHOS XG website or create a link to it on your desktop.
For more information, see the Help function of your internet browser.

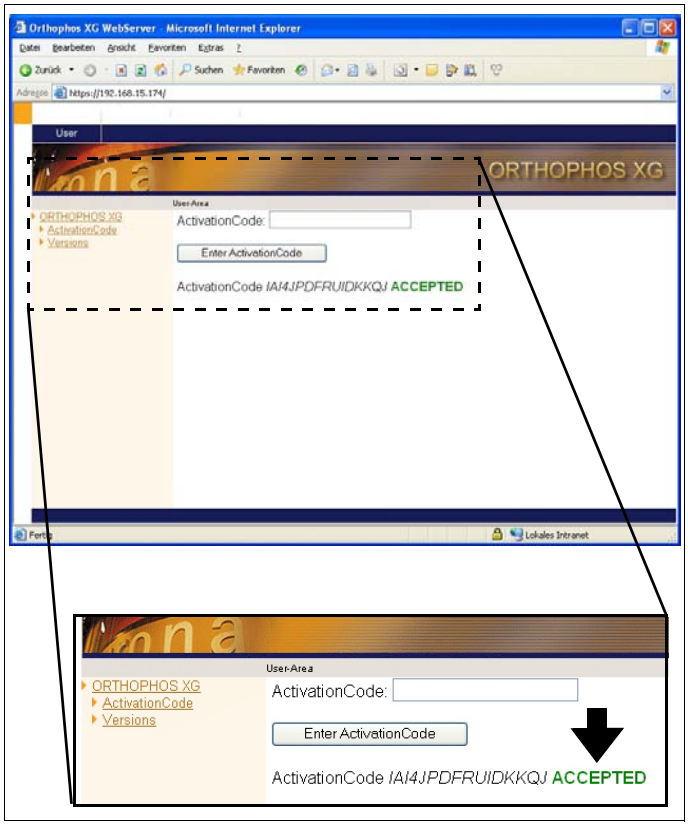


If you have purchased a certificate with a corresponding activation key code, you can extend the functionality of your ORTHOPHOS XG system.

To do this, click “**ActivationCode**“.

A website with an input field for the activation key code is then displayed.
Enter this key code in the **"ActivationCode"** field.

Confirm your entry by clicking "**Enter ActivationCode**".



If you entered the activation code correctly, a line displaying this code and "**ACCEPTED**" will then appear.

If the code is displayed with the comment **"FAILED"**, please check the code and enter it again.

Your function extension is activated and you can close the web browser again.

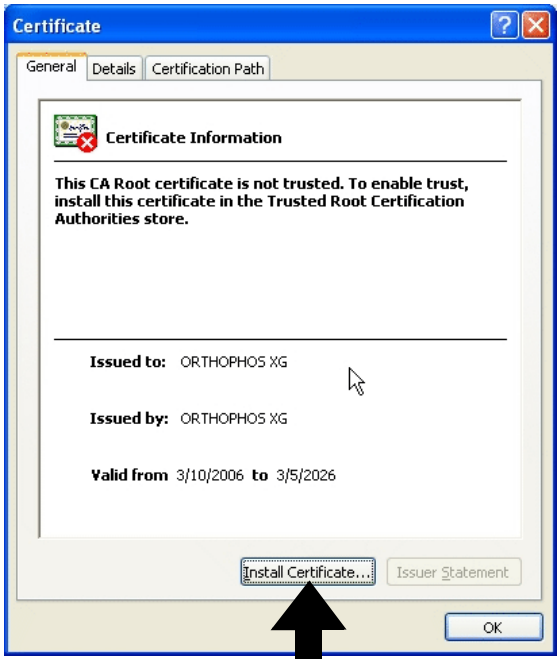
Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.
The security certificate date is valid.
The name on the security certificate is invalid or does not match the name of the site
Do you want to proceed?
Yes
No
View Certificate

Certificate check (operating system function)

If you are calling up the ORTHOPHOS XG web page for the first time, the following procedure is required:

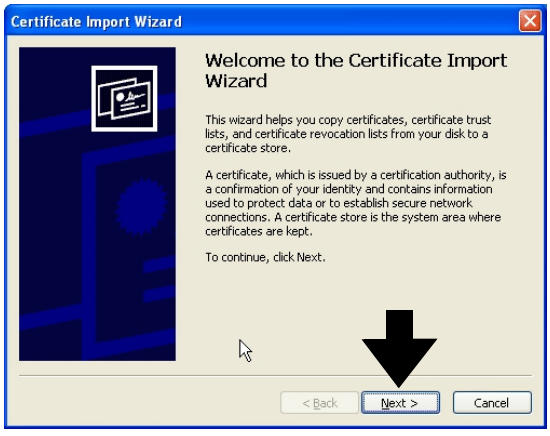
The adjacent safety security certificate will be displayed if the certificate of the ORTHOPHOS XG has not yet been installed.

Click "**View Certificate**".



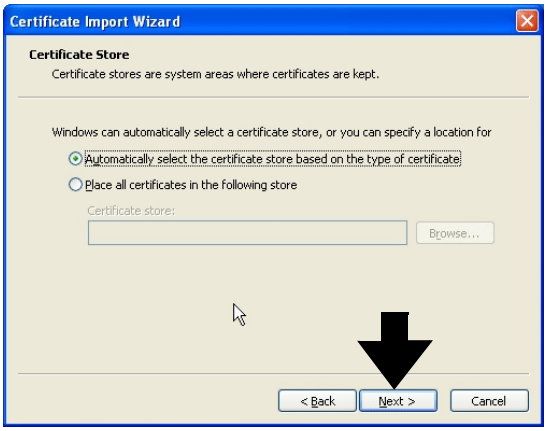
The "**Certificate**" dialog box then appears.

Click the "**Install Certificate**" button and confirm with "**OK**".


Certificate Import Wizard
Welcome to the Certificate Import Wizard
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.
To continue, click Next.
< Back
Next >
Cancel

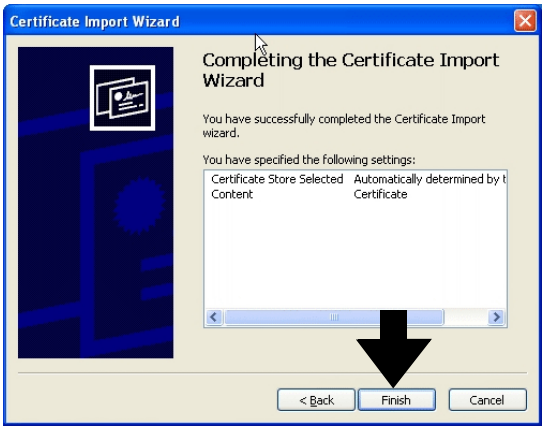
The "**Certificate Import Wizard, Welcome**" dialog box then appears.

Click "**Next**".


Certificate Import Wizard
Certificate Store
Certificate stores are system areas where certificates are kept.
Windows can automatically select a certificate store, or you can specify a location for
Automatically select the certificate store based on the type of certificate
Place all certificates in the following store
Certificate store:
Browse...
< Back
Next >
Cancel

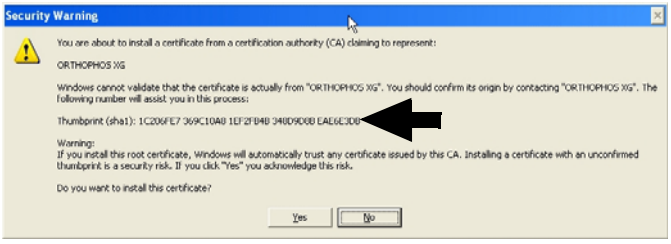
The “**Certificate Import Wizard, Certificate Store**“ dialog box then appears.

Click “**Next**“.



The “**Certificate Import Wizard, Complete the wizard**“ dialog box then appears.

Click “**Finish**“.


Security Warning
You are about to install a certificate from a certification authority (CA) claiming to represent:
ORTHOPHOS XG
Windows cannot validate that the certificate is actually from "ORTHOPHOS XG". You should confirm its origin by contacting "ORTHOPHOS XG". The following number will assist you in this process:
Thumbprint (sha1): 1C206FE7 369C10A8 1EF2FB4B 348D9D8B EAE6E3DB
Warning:
If you install this root certificate, Windows will automatically trust any certificate issued by this CA. Installing a certificate with an unconfirmed thumbprint is a security risk. If you click "Yes" you acknowledge this risk.
Do you want to install this certificate?
Yes
No

When the following security warning appears, please check the fingerprint
"1C206FE7 369C10A8 1EF2FB4B 348D9D8B EAE6E3DB"
to make sure that it matches the fingerprint displayed in the window, and then click **"Yes"**.

Conclude the process by clicking “**OK**“.

We reserve the right to make any alterations which may be required due to technical improvements.

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